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LECTURES
ON
COMPARATIVE ANATOMY AND ANIMAL PHYSIOLOGY,

DELIVERED BY

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LECTURE XXII.

ON THE OSTEOLOGY OF PACHYDERMA.

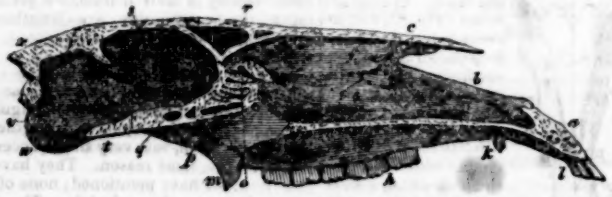
THE luxuriant vegetation which covers the nakedness of the dry land affords endless materials for the development of terrestrial quadrupeds of gigantic size, but, like the huge inhabitants of the deep, they manifest an inferiority in the elaboration of the higher parts of their structure. Their organs of vegetative life are developed at the expense of their organs of relation. This is not more apparent among the ruminating quadrupeds we were examining yesterday, than in the huge-bellied *pachyderma*, which are alike organised for vegetable food, but have not the stomach constructed for rumination. They are better provided with teeth than the ruminantia, and masticate their food before, not after, it has been once swallowed. By the greater strength of their extremities they are enabled to masticate their food while standing and while feeding. The ruminantia collect their food into the paunch while erect upon their slender legs, but they masticate it, or ruminate, while reclining on the turf.

The pachyderma, therefore, though subsisting on the same kind of vegetable matter, need no power of rumination. They are almost destitute of horns, but, like the hornless ruminantia, they are generally provided with canine teeth, and, like the canine-toothed hornless camels, they have incisors above as well as below. Their kind of food requires great capacity of stomach and intestine, great chylopoietic viscera, and a large abdominal cavity, for it contains little nutritious matter in a given bulk of material, and that little requires to be elaborated by complex chemical processes, and large glandular organs. Their heavy carcass needs strong pillars of support,—not the feeble elastic limbs possessed by the nimble ruminantia, for their safety seldom depends upon their rapidity of flight, but on their massive bulk and their weight. As the scapular arch of mammalia is not fixed, like the pelvic, to the sides of the vertebral column, the weighty trunk of the pachyderma has its two anterior pillars of support brought together as nearly as possible under its axis, and not thrust asunder by the interposition of clavicles between them and the median plane of the body. It is not on the herbage alone of the plains and the valleys that the pachyderma feed, but on every kind of vegetable matter, and obtained from every variety of situation; hence the great variety of their forms and structures, compared with the uniformity we saw in the herbage-eating ruminating quadrupeds. Indeed their skeleton and other parts vary so much that they are grouped together rather by their negative non-ruminating character than by any positive traits of structure which are common to the whole. We thus find assembled together in this group all the solipeds or solidungulous quadrupeds, the tapirs, the hogs, the conies, the hippopotami and rhinoceroses, and the gigantic proboscidian animals, the elephants and mastodons, besides many other quadrupeds whose race is now extinct. Indeed there is no subject of more interest to the geologist than the study of the osteology of the pachyderma, from the innumerable gigantic remains of *mammoths* and *mastodons*, contained in the alluvial formations of all continents, from the remains of huge *rhinoceroses* and *hippopotami*

spread over Europe, from the numerous *palæotheria* so characteristic of the era of the Paris gypsum formation, and from the *anoplotheria*, *lophiodons*, gigantic *tapirs*, and other interesting pachyderms, which have left their remains so abundantly in the newer formations. By these extinct forms, not only are the pachyderma brought closer to the ruminantia, but the apparently isolated existing genera, as the elephant, are surrounded with congeners, and the most dissimilar existing forms are made to pass more gradually into each other. The solidungulous quadrupeds, resting on a consolidated union of two toes into one, have the two lateral toes of the feet very imperfectly developed, and not reaching the ground; but in the palæotherium, the tapir, and the rhinoceros, these lateral toes extend with the middle toe to the ground. The palæotherium and the anoplotherium have the same remarkable forms of the molar teeth as the rhinoceros and the hyrax; and the palæotherium is connected with the pecoris and the solipeds through the tapirs, by the incisors and canine teeth.

From the skeletons of the ruminantia, the most natural transition is to those of the solidungulous quadrupeds, as the zebra, the quagga, the horse, and similar species, which rest on the point of a single toe in all the extremities. Look to the lengthened head and the long flexible neck of those animals, to reach the herbage of the plains, and their long muscular legs to outstrip the winds when they are pursued in their native wilds. They have no paunch to receive and soften the food to a pulp before it is masticated, but they grind it standing, as they crop it from the turf, and prepare it at once for the alimentary canal; hence the great magnitude and length of their prismatic quadrangular molar teeth, and the extraordinary depth of their jaws to receive them, and to supply them with the means of rapid growth, to compensate for the very quick consumption of their crowns. They have six incisors (*Fig.* 86, *l*) above and below, with

Fig. 86



grooved crowns in their young state, canine teeth (*Fig.* 86, *k*)—in the male more constant in the upper than in the lower jaw,—and six long prismatic molar teeth (*Fig.* 86, *h*) on each side of each jaw, with square flat crowns, composed of alternate convoluted layers of enamel and osseous substance. The direction of these layers of enamel is chiefly longitudinal, as in the jaws of the ruminantia, marking the lateral motion of the lower jaw, and the free lateral motion of its condyle on the flat articular surface of the temporal bone. Those crowns of the molar teeth necessarily meet each other, to bruise the vegetable substance on which they feed. The head of the solidungulous quadrupeds presents the same lengthened form, depending on the same parts that we have seen to lengthen the head in the ruminantia. This lengthened form of the head is dependent upon the great development of the bones of the face, for the cranial cavity (*Fig.* 86, *s*) is comparatively small, as in all vegetable-eating quadrupeds. Its capacity is, to that of the face, about as one to four. It is the reverse of the proportion which it has in the human head, for in man the cranial cavity has its capacity to that of the face as four to one. For the reception and the nourishment of the six large incisor teeth above, you observe that in these solidungulous quadrupeds the intermaxillary bones (*Fig.* 86, *a b*; *Fig.* 87, *n n*) are large, long, and broad. The upper jaw-bone (*Fig.* 86, *d g*) is also of great extent, and of great height. It possesses an extensive surface, for the attachment of very long and large muscles to move the lips and the nostrils. It presents an extensive bed for the long quadrangular molar teeth, and the pulps that are contained in this deep jaw, and which require to grow very rapidly, from the quick and powerful attrition to which they are exposed in grinding their vegetable food. The jugal bone is of great length, passing forwards over a large part of the face, and, by extending backwards, below the orbit, it supports the very long zygomatic process of the temporal bone, which here reaches the orbit, and the zygomatic process of the frontal bone, which extends downwards, uniting in these animals not

with the malar, but with the zygomatic process of the temporal bone, and forming a complete ring around the orbit, as we see formed round the orbit in the ruminantia. The orbits you observe completed in this camel, one of these ruminantia, by a circle of bone extending around, and projecting remarkably, in a transverse direction, thus giving an extension laterally to the orbits, and an extensive field of vision to those timid and defenceless, but watchful quadrupeds. Close as the structure of the camel is, in the head, and in most of the skeleton, except in the extremities, to the solidungulous quadrupeds, you observe that it differs considerably in what relates to the osseous parts surrounding the orbits. The frontal bone in the solipeds (*Fig.* 87, *d d*) is of very great breadth and extent, extending thus greatly, by its breadth, the distance existing between the two orbits, and removing the two eyes to the most distant lateral points of the head. The parietal bones (*Fig.* 87, *b b*) are remarkably small in this large head, and in their smallness they correspond with the small development of the hemispheres of the brain beneath them. The occipital bone, of a very thick cancellated structure (*Fig.* 86, *x*; *Fig.* 87, *a*), presents an elevated transverse ridge, for the attachment of the muscles, and the strong ligaments of the neck. The ligaments extend along the spinous processes, from the occipital bone to the middle of the tail, giving support to the head, and elasticity to the whole back. The turbinated bones, especially the superior (*Fig.* 86, *f*) on each side, are of great length and size in the solidungulous quadrupeds; and the turbinated portions of the ethmoid bone (*Fig.* 86, *o*) present an immense surface for the organs of smell. The cribriform plate of the ethmoid bone presents a large and deep perforated cavity upon each side of the middle plate; and we find, in this, the tubercle of the olfactory nerve, a part so large in the lowest vertebrata, surrounded with its cineritious substance, as in most of the ruminantia. The immense nasal bones (*Fig.* 87, *e e*) here form a large portion of the face, and the large lachrymal bones extend downwards between them and the malar bones; there is therefore no nasal process of the superior maxillary bones.

Fig. 87

The frontal sinuses are of great size, as also are the sphenoidal.

The solidungulous quadrupeds, like most of the ruminating animals, have a lengthened form of the neck, with lengthened spinous processes of the dorsal vertebræ; and thus the solidungulous quadrupeds differ from many of the other pachyderma, and are to be compared, in these respects, as in many others, rather with the ruminantia. They are unlike the ordinary pachyderma, for in most of them the neck, for the length of the head, is remarkably short. In the solidungulous quadrupeds the neck is lengthened, and the transverse and spinous processes of the cervical vertebræ are very small, so that that there is great extent of motion admitted in every direction of the neck, which compensates for the limited extent of motion in the extremities, and allows the neck and head to be used as arms and hands for ordinary purposes.

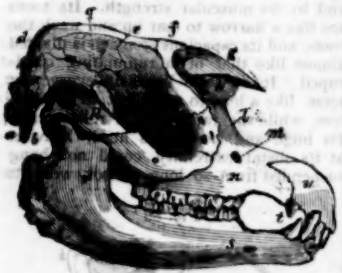
We observe in them the same carinated and compressed form of the thorax which we see in ruminating animals. On account of their comparative lightness and the velocity of their motion, we perceive that the extremities are lengthened, slender, zig-zag in their articulations, and the pelvis is attached obliquely to the sacrum, so that there is considerable elasticity given by these oblique articulations. As in the ruminantia, the solidungulous animals have the scapula of a lengthened and simple form, with very short processes, and for the same reason. They have no clavicle, as I have mentioned; none of the pachyderma can have clavicles. The eighteen pairs of ribs are narrow, and adapted for extensive respiration. The humerus and the femur are short bones, but especially the former, and the olecranon of the ulna is almost the only part of that bone developed. The most remarkable parts of their extremities are the hands and feet, which extend downwards from a great height, and terminate each in a single toe.

We observe that the phalanges, three in number in each toe, of the anterior and posterior extremities, are composed each of two bones anchylosed together, so that only one toe appears to touch the ground, which is covered with a large undivided hoof, from which they are called *solidungula*. The lateral rudimentary bones, however, which are observed at the sides of the canon-bone, indicate the rudiments of the inner and outer toes, which exist here only in a very imperfect state, as in many ruminantia. The anchylosis seen in the canon-bone of the ruminantia has here proceeded downwards through the whole extent of the feet.

There is great dissimilarity in the forms

of the teeth, and in the general characters of the skeletons of the ordinary pachyderma as the tapirs, the hyrax, the hippopotami, and the rhinoceroses. The tapirs are almost isolated from all other existing forms of pachyderma, but from the immense number of bones closely allied to those of this animal, which are found in a fossil state, it appears, like the elephant, to be a remnant of a great family of quadrupeds now almost extinct. The general form of the body, and the living habits of the tapirs, are nearly allied to those of the hogs and the pecaries; and the general form of the skeleten, especially of the extremities, resembles that of these more common species. But in the form of the head, and in the muscular long proboscis which it supports, it has no parallel. The head is comparatively large, and remarkable for its elevation in the region of the frontal bones (*Fig.* 88, *f*), and the great vacant space between the nasal bones (*Fig.* 88, *g*) and the very short and broad intermaxillaries (*Fig.* 88, *u*). The occipital bone (*Fig.* 88, *d*) rises high upon the cranium, as in the babyrussa and the pecari, but is not elevated into so acute a transverse occipital ridge, because the

Fig. 88



nostrils here are more long, soft, and flexible, and are not employed for digging as in the hog tribe, which requires in these animals more muscular strength in the back part of the head and neck, and a more elevated occipital ridge. The temporal fossa is large, and the two parietal bones (*Fig.* 88, *i*) have thence a compressed form approaching to their character in carnivorous animals, from the resistance which the teeth have to overcome and the consequent magnitude of the temporal muscles. The most peculiar feature in the face of the tapir, especially in the Indian species (*Fig.* 88), is the short, broad, based, tapering, heart-shaped nasal bones (*Fig.* 88, *g*), articulated by a very short nasal suture to the frontal bones, and projecting straight forwards from the frontal bones, so as to support and protect the upper part of the base of the proboscis. The lachrymal (*Fig.* 88, *l*) and the jugal bones (*Fig.* 88, *o*) are of great size, the former bounding the orbit in front, and the latter below, but the orbit has no osseous margin behind, being quite continuous with the temporal fossa. The canine teeth, present both above and below, are very small, especially in the upper jaws (*Fig.* 88, *t*); there are six incisors above, and the same number below. There is a considerable vacant space between the canine and the molar teeth, which are seven on each side above, and six on each side of the lower jaw. The molar teeth of the tapirs are remarkable for their transverse, sharp, wedge-shaped ridges in their young or unworn state.

The limited motion and the strength of the neck are seen in the magnitude of all the processes transverse and spinous of the cervical vertebræ, and the whole of the dorsal and lumbar vertebræ have long spinous processes terminating in rounded tubercles. The sacrum is long, consisting of about seven vertebræ, and the sacro-iliac articulation is very oblique. The thorax is very narrow and carinated in front, and the elements of the sternum are much compressed laterally, and give a remarkably curved form to the breast of the living animals by their suddenly arching upwards to the neck. The scapulæ have a rounded vertebral margin, and their spinous process is suddenly curved backwards at its middle. The ulna and the fibula are developed throughout their whole extent, but admit of no pronation or supination in either extremity. There are four toes on the anterior and three on the posterior extremities, with large terminal phalanges of a crescentic form, and much extended transversely, like the terminal phalanges of the rhinoceros, or a miniature of the large terminal phalanx of the solidungula.

The frontal sinuses are in the bayrussa and the hog tribe enormously developed, and the cells, in fact, separate the outer from the inner tables of the skull over the upper and greater part of the head. We see in those animals, in a lesser extent, what is so extensive and remarkable in the skull of the elephant—the cancellated structure or the diploe of the anchylosed cranial bones covering the brain. The anterior part of the cartilaginous septum of the nostrils is ossified, and you observe in this hog, presenting the means of supporting the dense callous extremity of the nose so useful in digging. We find that in like manner the septum of the nostrils of the fossil rhinoceros is ossified as far

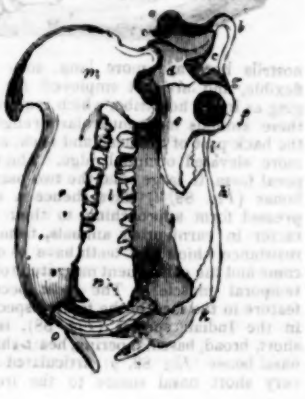
back as the vomer itself, which must have given a firm and powerful support in that extinct animal to the large horns placed at a distance asunder, because it had the head much more lengthened than the existing rhinoceros. It had the means there of strongly supporting the anterior horn with its arch, which was placed above the nasal bones. In the existing rhinoceros, in all the known species of the genus, the septum is of a cartilaginous texture.

We observe again, that in these skeletons of the hogs, the neck is short and strong for digging, the spinous processes of considerable length; the spinous processes of the dorsal vertebræ much lengthened, and of considerable strength for the support and motion of the heavy and powerful head. The neck requires here to be short, and the spinous processes of the dorsal vertebræ require to be strong, not merely on account of the weight of the head, but on account of the resistance the animal has to overcome in obtaining its food, in digging the ground, in searching for roots, and for similar purposes. In these animals you see a large portion of the trunk covered by ribs, which present, by their considerable expansion transversely, a large thoracic cavity. The pelvis is directed more obliquely downwards from the sides of the sacrum in these heavy-trunked animals, than we saw it in the light and nimble deers and antelopes. In place of the lengthened narrow form of the scapula and the small spinous process we saw in ruminantia and solidungula, we observe that it is much broader, and the spinous process is of great size and of a curved form, bending backwards, so as to give an extensive surface for muscular attachments, and a secure position to the *infra-spinati* muscles.

The anterior and the posterior extremities are the parts of the skeleton which, in these ordinary pachyderma, differ most from those of the ruminating quadrupeds, especially in the great development of the outer and the inner toes, so that four toes at least here generally reach the ground. The metacarpal and the metatarsal bones are much shortened, and present a very different appearance from the corresponding lengthened canon-bones of ruminating quadrupeds. The radius and ulna, the tibia and the fibula, are developed throughout their whole length, and admit of as little motion as in the tapirs. The feet are shortened and strengthened in the hog tribe, both to give a stronger support to their trunk, and to assist them in digging for the succulent roots of plants. The great development and the singular direction taken by the canine teeth in most of these animals, especially in the *babyrussæ* and the *phacochærus*, or Æthiopian hog, are probably also related more to their prehensile uses than to their dividing the food, or their defending the animals from danger; they serve to hook and tear up the brush wood and plants by the roots, and may defend the face and eyes from the thorns. The molar teeth of this Ethiopian hog consists of cylinders of enamel filled with osseous substance, and united together externally by a *crusta petrosa*, as in the teeth of the capybara and the elephant, and they advance from behind forward in the jaws as in these animals. In the babyrussæ the superior canine teeth grow directly outwards from their sockets as other teeth, but the alveolar portions of the jaw which contains them are bent upwards themselves, as if by the contact and pressure of the inferior canines from a very early period.

The massive skeleton of the ponderous hippopotamus is constructed for a semi-aquatic life. Feeding on the succulent plants and roots which cover the muddy banks, or the bottom of the great rivers of Africa, this animal is organised to consume and to digest great quantities of vegetable matter, to wade or to walk on the land or in the water, and to resist the force of the current by its ponderous bulk, by its smooth, dense, and naked surface, and by its muscular strength. Its teeth are like a harrow to tear up and wash the roots, and its capacious stomach is divided almost like that of a ruminating quadruped. Its massive bones in every part seem like a load to anchor it to the bottom, while the rapid stream rolls over it. Its huge and ponderous head, heaviest at its distal extremity, could not hang suspended from so long a neck, were its

Fig. 89



weight not supported during half the animal's life, by the dense element where it seeks its food. Its enormous teeth radiate in confusion from the end of this expanded muzzle, to grasp at once whole bushes for the maintenance of so large a carcase. See how diminutive is the cranial cavity of this animal compared with the magnitude of its face. Feeble in intellect as other herbivorous quadrupeds, and ponderous in bulk, it has the muscular force and the ferocity of one of the carnivora.

The incisor and canine teeth, which you observe (*Fig.* 89, *a a*) in this specimen, are placed so irregularly in the intermaxillary bones, and in the anterior part of the upper and lower jaws, although apparently arranged without any regard to symmetry or to beauty, yet when we perceive the uses to which they are applied, we discover here, as in every similar piece of structure, that there is a beauty in the apparent deformity. There is the beauty of adaptation. It is a beauty at the perception of which we arrive only by study and by observation, and which does not at once strike the eye like those impressions which we receive from colours or from graceful proportions. These teeth are instruments of extraordinary density and strength, by which the branches and roots of plants are seized in large quantities, torn from their attachments, and which are thus held exposed, as in a sieve, until they are washed from all the earth and mud which may chance to cover them. No disposition of the teeth could, therefore, be better adapted for this purpose than just this heterogeneous and confused arrangement which we see in the head of the hippopotamus. The four inferior straight incisors project almost right out from the lower jaw, while the four curved superior incisors have different degrees of obliquity downwards, as you see from these very large, though short, intermaxillary bones (*Fig.* 89, *k*). The two superior canine teeth are very short, straight, and directed forwards; those of the lower jaw are of great length, deeply grooved longitudinally, sharpened by an oblique attrition against the upper, and curved upwards and outwards. These canine teeth grow very rapidly, and are, consequently, of great length within their alveoli, from their rapidly wearing by rubbing one on the other. They are sharp cutting instruments, kept sharp by the constant attrition of one on the other, so that they serve to cut the tough parts of the plants, such parts as require to be cut, while the incisor teeth serve as instruments for tearing the branches and roots entire from their fixed situations. The molar teeth (*Fig.* 89, *l*), seven above and six below, present elevated conical tubercles on their broad crowns. Those tubercles meet each other, but are not much worn down. They are obviously not employed in that continued and powerful attrition which we see the molar teeth of ruminating quadrupeds subjected to, nor for that kind of grinding action which we see in the solidungulous pachyderma; but these broad mammillated crowns, which we see in the molar teeth of the hippopotamus, are the best adapted for the compression and bruising which the succulent plants require that those animals use for food.

No ivory in commerce equals in value that of the canine teeth of the hippopotamus, from the density and compactness of its texture, the beautiful white colour which it possesses, and for the length of time during which it preserves this colour. Like most other teeth presenting a curved form, we find that the inner or concave surface is almost destitute of enamel, and upon carrying a sharp instrument round the surface of the tooth, you can know, by attention to the feeling of resistance or of yielding you obtain through the hand, when you have come upon the dense, resisting, enamelled surface, and when you have left the enamelled surface to come upon the softer, yielding, osseous substance. The sharp instrument slides, as over polished glass, when upon the enamelled parts of all such teeth, but when you come to the osseous part you find it scratch a little that softer texture, and no longer slide smoothly over the unyielding surface.

The face of the hippopotamus is enormously developed, from the orbits to the end of the muzzle. This development you observe to depend chiefly on the expanded and thick intermaxillary bones (*Fig.* 89, *k*), the great length and magnitude of the upper jaw-bones, which are remarkably compressed and narrow in the middle; the great magnitude and extension forwards of the malar bones (*Fig.* 89, *e*). Almost the whole of the lachrymal bone (*Fig.* 89, *i*) is here brought out from the orbit to form a part of the lengthened face, the orbits being remarkably small. The nasal bones (*Fig.* 89, *h*) are of great extent, and at their upper part expand to a considerable breadth. The frontal bones (*Fig.* 89, *f*) are extended transversely to a great distance, and are remarkably elevated at their lateral parts (*Fig.* 89, *f*), to give rise to the peculiar prominence and elevation of the orbits in this animal. The parietal bones (*Fig.* 89, *c*) are remarkably small, compressed, arched, anchylosed, and enclosing a very small cranial cavity for so large a head and so huge a

carcase. The occipital bone (*Fig.* 89, *a b*) rises perpendicularly upwards, and presents an elevated transverse ridge for the attachment of the powerful muscles of the neck, which support and move so large a head.

The magnitude of the malar bone (*Fig.* 89, *e*) which we here see in the hippopotamus, and which we have seen already so remarkable in the herbivorous cetacea *Fig.* 79, *f*), when contrasted with the blowing cetacea (*Fig.* 76, *i*), indicates the vigorous muscles of mastication—the masseter muscles—passing from it to the enormous lower jaw of all these animals. It is on account of their tough vegetable food that we observe the malar bone so much developed in this animal, and so singular a difference in this bone between the herbivorous and the blowing cetacea. There is a large and wide space here for the temporal muscles, and a great surface below on the expanded and arched angle of the lower jaw (*Fig.* 89, *m*), for the attachment and protection of the temporal and the masseter muscles, and the expanded form of the jaws both above and below affords ample space for the large prominent lips of the hippopotamus. The condyle of the lower jaw and the glenoid cavity are directed transversely, and the coronoid process is very short.

The great length and magnitude of the spinous and transverse processes of the cervical vertebræ show the strength and immobility of the neck, and a suitable provision for the great weight of the head. The vertebræ are massive in their form throughout the whole column, and the sacrum contains more vertebræ than in almost any other mammalia. The spinous processes of the dorsal vertebræ are of great length and strength, and they terminate in large tubercles; these processes continue large and strong along the lumbar and the sacral vertebræ. From the magnitude and extent of the ribs the whole trunk seems shielded in solid bone, and where they terminate, the transverse processes of the lumbar vertebræ extend laterally to a great distance. The pelvis is of unusual length, and attached obliquely to the column, the weight of the body being greatly relieved from the legs by the density of the element in which it so much resides. The rounded iliac bones expand suddenly outwards, or laterally, from the sacro-iliac articulation, and the tuberosities of the ischia are extended and curved upwards. The numerous vertebræ composing the sacrum correspond with the great length and obliquity of the pelvis, protecting it behind or above, throughout its whole extent. The scapula is large, broad, massive in its form, with an elevated recurved spine, and with prominent coracoid and acromion processes. The extremities are so short that the long trunk of the animal almost touches the ground. The humerus and the femur are proportionally lengthened and strong bones, and compose a great part of the extremities, as in many other massive forms of the skeleton, where the hands and feet are generally short and truncated, in order to sustain more safely the weight of the heavy body when the animal is on tiptoe in progressive motion. In the extremities of the hippopotamus there are both strength of bones and extent of motion. The radius and the ulna are remarkable for their shortness and thickness, especially the radius; and the olecranon is very massive and limited in extent. The eight bones of the carpus are disposed in two rows, and the four diverging fingers of the hand have the metacarpal bones rather longer than the whole three phalanges of each finger. The terminal phalanx of each finger and toe is here only a small rough bone, without any of the lateral extension which is so remarkable in the rhinoceros and the tapir. The tibia and the fibula are wide apart, and the fibula is remarkably slender. The feet, like the hands, possess great strength and flexibility, the tarsus is proportionally long, and the calcaneum projects far backwards. The proportion of the metatarsal bones to the whole three phalanges of each of the four toes is the same as in the corresponding bones of the hands. The short, flat, elastic, and truncated feet of the hippopotamus, like the club feet of the elephant, have the best form for walking on a soft surface, or for being easily withdrawn from the mud while wading in quest of food.

PROPOSED GENUS "TETRACAULODON." — Dr. Isaac Hays, of Philadelphia, has just published, in the Transactions of the American Philosophical Society, an elaborate memoir on the fossil bones of the mastodon and tetracaulodon. The late Professor Godman, a short time before his death, furnished a description of some fossil bones, which, from the presence of tusks in the lower jaw, he proposed to make the type of a new genus, under the title of "tetracaulodon." Some naturalists, however, suggested that these lower tusks were merely the milk-teeth of the young mastodon, which fall out as the animal grows older. Dr. Hays has made a careful examination and comparison of all the specimens which have been as yet collected, with a view to refute this opinion. We have had an opportunity of examining the fine collection of casts belonging to the American Philosophical Society, and feel convinced of the correctness of the opinion confirmed by Dr. Hays. At any rate the only question that now remains to be solved, before the genus *tetracaulodon* is admitted, is that originally suggested by Mr. Titian Peale, that the lower tusks may be a mere sexual difference. Unfortunately, no means exist of deciding this point.—*Baltimore Medical Journal*, October, 1834.

ANATOMY AND PHYSIOLOGY.

LECTURES

ILLUSTRATED BY THE

HUNTERIAN PREPARATIONS

IN THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS, LONDON.

Delivered at the College in 1833, *by*

SIR CHARLES BELL, K.G.H., F.R.S.

LECTURE IV.

BONE.—*The proof it affords of continual Change in the Animal Frame. — Its Growth; Vascularity; Sensibility; Permanency of Shape; Morbid Increase; Reproduction; and Liability to, and some Effects of, Disease.*

In the three lectures of this course which I have already delivered, I endeavoured to explain the comparative anatomy of the skeleton of animals, and you will now, I trust, conceive it natural that, following that example, we should look more particularly at the human skeleton.

One cannot but be surprised to find, that the parts which seem so solid, so permanent—the bones—should afford us the only *proof* of the continual changing of the body. Is it not surprising, when you see that the bones of skeletons afford evidence of the particular forms and classifications of animals,—when you see that these bones prove, as it were, the changes that the world itself has undergone,—to find—as the preparations before you are intended to show—that that solid texture of the animal body, bone, is changing continually, and undergoing a process of secretion and absorption? And how strange, too, it is to find, that parts so solid, and, as you would suppose, the most inanimate portions of the body, present us with the very proof we wanted of perpetual change going on in the animal body.

I have, then, you see, according to a plan which I conceived would be the most agreeable to you, brought you to another division of the preparations in the gallery —preparations which exhibit the mode of the formation of bone, the vascularity of bone, the absorption of bone; which give, in short, proof that the bones are alive, and subject to all the changes of the natural body. I cannot pass over this department, and yet I know full well, on looking around me, that I must not submit to you the mere elements of your profession; I must not demonstrate these parts; indeed I cannot demonstrate them. I am convinced, in fact, that you know them, that your several teachers have taught you them; and I only beg you to recollect that they were enabled to teach you those things by means of the preparations before you,—by means of the example and labours of Mr. HUNTER, who preceded them.

It must, therefore, be interesting to you to know that Mr. HUNTER not only has done so much in furnishing you with the principles of your science, but that he was the very principal person who gave a character to England for possessing a knowledge of the art of anatomy. There is nothing more remarkable than the beauty of these preparations, and although we might be desirous to have some of them renewed, yet you will be pleased to think that those we have are actually from the hands of Mr. HUNTER himself.

My first object now will be to make manifest to you the vascularity of the bones; and we must here do justice to another great physiologist, HALLER. We understand from these preparations, that before the bone is completed, there is a substance formed, of cartilage, to support the texture of the frame, and to support such action as belongs to the embryo of the fœtus; but presently bone is to be secreted, and then a curious appearance is presented. Bone presents several different zones, as HALLER describes them. When bone is deposited, the phosphate of lime being opaque, produces an opacity, where it is perfectly secreted; and here you have a proof—which these preparations also give you—that it is in the centre of the shaft of the bone that ossification begins. Where that is perfect it is closed in and covered over—a proof of the vascularity that precedes the completion of bone. But at the margin of the bone, vessels shoot forth, the cartilage becomes more vascular, and a ring is there formed, of the original blue colour of the cartilage, with red vessels and yellow ossification, so mixed together as to form a zone of a diffused yellow colour. The first colour forms a zone of red, in which vessels are seen; then a yellow colour is seen, and beyond that, where the cartilage is not changed, it remains transparent. Many have thought it impossible for HALLER rightly to describe zones as existing in bone. All the preparations before us serve to show that bone is originally and altogether formed from the centre of the shaft.

The next series of preparations shows the manner in which the epiphysis or extremity of the bone is formed differently from the shaft; for in order to complete the bone, in which ossification is proceeding from the centre to the extremity, another point of ossification begins at the extremity itself. From the periosteum,

or, rather, from the perichondrium, you will find a little vessel apparently starting out; or, as some authors describe it, an artery is there pushing forwards into the cartilage; but that is altogether an artificial notion. The cartilage is alive; it is growing, and the growth is vascular. It is not a new vessel which is forming, but remarkable changes take place there in consequence of the red blood; and this seeming vessel is a track of red blood. The most superficial observer would call the coats of the artery the periosteum. Now, observe, the little streak of blood points towards the small portion of cartilage; that is absorbed, and if you take a probe and touch it, you feel a little portion of bone; and if it be finely injected, the minute portion of bone is exhibited in a speck. Now it is not at one speck merely that this takes place, but the ossification increases, and creates such an osseous nucleus as forms the epiphysis of a bone,—producing a distinct portion of bone, curiously calculated to perfect the extremity, for the obvious purpose of adapting the extremity to its articulation. Perhaps such a bone could not otherwise be perfected.

As I am addressing you as physiologists rather than as surgeons, I cannot but remind you, that there is such a thing as a diastasis, a separation of the bones—where there is no fracture—and that in children and lads up to 14 years of age, you have a sort of fracture without crepitus,—a thing exceedingly difficult to comprehend; it wants the character of a fracture—crepitus. It consists of the separation of these distinct nuclei; it is a separation of the cartilage, without, of course, a rupture of bone. The child in the nurse's arms is fretful and feverish; it throws itself back while she grasps it to her bosom, and nips off the end of the thigh bone. Several examples of the kind have occurred, and the separation occurs not only from accident but from disease, for disease sometimes begins at the epiphysis of a bone rather than in the centre, and sometimes in the diaphysis instead of the epiphysis, as in necrosis.

The next thing to be exhibited in these preparations,—and Mr. HUNTER would here himself point out its importance,—is their vascularity. You remember that the vascularity is proportioned to the cavity of the bone, and that it changes with the increase, changes with the injury, of other parts. Observe the very singular effect of this change—a change in the sensibility of the part. As surgeons, it is particularly necessary that you should recollect this, because you may employ a perfectly correct and legitimate mode of reasoning, and yet be in error. A certain operation has been performed when the bone is in the natural state and is insensible. But if you miscalculate the condition of the bone, and the bone is in an inflammatory condition and highly sensible, you may lose the patient by the operation. The trephine, for example, may be employed with propriety in one case, the bone not being inflamed, while even if a probe light upon it, when it is in a state of inflammation, a shivering is produced throughout the whole body. You may conceive what will be the result of operating during such a condition of the parts. Unfortunately I have seen and known the effect to be a loss of life,—the consequence of this miscalculation, or, rather, in consequence of leaving the one circumstance I have named out of the calculation.

Even if I had an opportunity of handing round the preparations, which, however, I have not, I am afraid I could not demonstrate the next fact, that nerves enter into the structure of bone; but we have the very best authority in the profession for saying that nerves do enter the bone, and those who deny it are under the necessity of forming some strange hypothesis, by which they may explain the existence of sensibility beyond the nerve. Some indefinite sort of term is used,—I know not well how to express it. Some property or power is said to exist, by which the sensibility of a nerve is extended beyond the point to which the nerve itself is stretched. But there is no necessity for such an hypothesis, because, with the arteries and ligaments which enter the foramen of a bone, you have a nerve, and find sensibility.

This is a subject of very great interest. I know of no series of phenomena that deserves more attention than the sensibility of bone, the sensibility of joints, the sensibility of parts around the bones—around the joints. In short it is so important to the physiologist, that I cannot omit dwelling on it. To comprehend the circumstances, you must regard the whole phenomena of sensibility. For what purpose does sensibility exist? Suffering pain yourselves, you can form an estimate of its importance as a safeguard to the body. You find that the law of cutaneous sensibility prevails at the surface of the body—sensibility of the surface to whatever threatens to injure the body, or does really injure it. But the most remarkable thing of all is, that when you have contemplated this sensibility of the surface, which is a means of protecting the delicate texture of the frame more perfectly than if it were covered with a threefold coating of brass, there still remains a

question as to how far the parts within partake of this sensibility. Now, no quality of the body exists as a superfluity; there is no work of supererogation in the frame; everything which distinguishes it is appropriate and necessary, and nothing is wanting. What then would be our condition, were we insensible to external impressions? I am sure there is not one of us in practice, not one who attends, or has attended a hospital, but has an answer to the question immediately ready,—an answer deducible, for instance, from the condition of a paralytic person. How much care does it require, on the part of the nurses and assistants, to prevent paralytic parts from becoming inflamed, and sloughing, without the knowledge of the patient! What is the difference between the man afflicted with paralysis, and your own condition? The slightest irritation or pressure causes you to shift your posture, so as to allow to every part its due circulation; but if a man be brought into the hospital, and laid on as soft a bed as possible, you find that if his position be not repeatedly changed, the hip will,—notwithstanding all the attention, and the most affectionate care, that those who are present can bestow on him—the hip will become inflamed, and, after lying a little longer on it, the parts will become dead. Sloughing in the hips, sloughing in the heels, is a necessary consequence of paralysis, from their want of sensibility. Can there be a better proof that the sensibility which gives us pain is the wisest and happiest provision against injury of the body that could be devised? You find the poor paralytic man sometimes brought into the hospital with his knees burned to the bone, because, from the insensibility of his skin, he has allowed himself to sit close to the fire. Indeed, this is almost a daily occurrence, and therefore I adduce it in proof that the sensibility of the body is its best possible safeguard against harm.

Now, reflecting on the sensibility of the soft parts of the body, we come more appropriately to the subject of the sensibility of bone. But on this we must not hastily decide. A surgeon will say, that the bone may be cut without pain; that a tendon may be cut without pain; that the periosteum may be cut without pain. If you are justified in acting upon this information, to whom are you indebted for the establishment of the fact? To Dr. Wm. Hunter; for it was under his observation, that the curious experiment was made of cutting a tendon. You remember the circumstance of a man—and it behoves one to recollect the fact as connected with these preparations, for I have no doubt they were made as an illustration of it—having the whole of his fingers so nearly cut off, that they merely hung by the great flexor tendon. A pupil, under Dr. Hunter's direction, placed a cord in a direction parallel to the tendon. The Doctor then looked at the patient, desired him to attend, and cut across the tendon. On asking the patient what he had cut, the man replied, "The cord to be sure,"—so insensible was he to the cutting of the tendon. It may be that you are all very familiar with the circumstance, but I conceive it to be of importance to bring back to your minds a recollection as to the person by whom it was ascertained. You may arrive by various means at the same conclusion, though the conclusion may be wrong; for if it happen that, in repeating the experiment, you use a pair of scissors instead of a knife, and the scissors are blunt, you will cause great pain. Dr. Hunter employed a knife with a sharp edge, and no pain was occasioned; but on bruising the tendon, great pain will be produced. This gives great interest to the experiment. Pain of the body is not intended as a punishment, but as a safeguard.

You next inquire what extent of sensibility belongs to internal parts. You can readily conceive that the force and muscular energies of the body need to be restrained,—that there must be some means of intimating what degree of exertion it will bear, what depth, for instance, you can drop, or what sort of a leap you can take. If there be no external guard against injury to internal parts, there is no check to the exertion of the body. Now the sensibility of bone is partial, not in *degree* only, but in *kind*; for there is a kind of sensibility belonging to all parts, whether the common integument of the body, or the surface of the eye, or the bone, or the periosteum. These facts indicate the mode in which we should pursue our investigation. The bone is insensible to cutting, and insensible to pricking, but it is not insensible to shocks. It is insensible in the *degree*, for sensibility in that respect would be superfluous, as no direct injury can affect it, without first alarming the surface. It is not insensible, however, to that which will reach it without passing through the surface,—to shocks or bruises, or the violence of our exertions. Indeed, I do not know anything more curious than the manner in which instinct here comes to our aid. A child learns not by experience, for it has fears and terrors before it has experience. I do not present you with that demonstration which strikes every man—the fear of death; but ask an old and experienced

nurse what is the condition of an infant as she comes down-stairs, and its contrary condition as she goes up, or allows the child to fall a little, and then raises it again, and you will learn, that the instant impression in the child in the descent is that of terror,—terror of falling. The child in going down stairs will struggle and be alarmed, but it will be perfectly placid when being carried up. Try the experiment yourselves, and you will be convinced of the fact. As it rises, there will be evident a perfect condition of quiet and rest; as it descends there will be a struggle,—as if it were endeavouring to recover itself, and that, too, long before it experiences injury of any kind.

The next experiments, the results of which are displayed in the gallery, are very interesting indeed, and I need not hint to you, Mr. President, that, interesting as it is for us to have the very preparations which were put up by the hands of JOHN HUNTER, there are some of them which require to be renewed. For example, those in which the demonstration of a fact depends upon the existence of colour, and where that colour is a vegetable colour. I allude to the preparations exhibiting the effect of madder which has been taken internally. After feeding an animal with madder, the bones are found to be tinged. This discovery was a great instrument in the hands of HUNTER. These preparations show that, in feeding a young animal on madder, the madder is increasingly deposited in the bone—that if the bone be secreted at the time that the animal is being so fed, the tinge is very deep. But not only is the bone which is formed during the period the animal is feeding in this manner tinged, but the old bone is tinged. Yet there is such a difference between the tinge of the old bone, and of that portion which is being deposited at the moment, that it is possible to exhibit the series of strata, as it were, of the old bone, and the succession of the new bone, merely by intermitting the feeding on madder. Feed the animal on madder for a fortnight, then discontinue it for a fortnight, and then resume it again, and you will find a succession of layers deposited in the bone.

As to the mode in which madder stains the bone, the prevailing idea is this:—The vegetable-colouring matter being in the blood at the moment at which the phosphate of lime is secreted, the phosphate attracts the colouring matter, which is thus deposited in the bone, and in the membranes and cartilages. By way of illustration, take an example from a piece of cloth that is to be dyed. The cloth will not receive the colour with which you desire to stain it. A third material, called a "mordant," is therefore used, because it has an attraction both for the cloth and the colour. Let us conceive, then, that the phosphate of lime is a mordant, which attracts the colouring matter, and is itself attracted by the membranes and cartilage of bone, and thus the colouring matter is united with the bone.

I am bound to believe that all this is very familiar to you, and yet we must consider what was the object of the experiment, and the preparations relating thereto. What do they imply? Why, the very circumstance with which I started—that the bone affords proof of that which you would suppose to be universal in the body,—alternate deposition and absorption; for, although we have been told many a long day since, that the body is continually changing, yet here and here only have we *the proof* of it; and the most remarkable part of the circumstance is, that the proof of what has been always *supposed*, is demonstrable only in the most solid texture of the body. It would be impossible, however, to suppose otherwise than that the body is perpetually undergoing changes. See the necessity of taking food,—the necessity of excretion,—the conclusion from which must be, that the parts of the body are continually changing. But for what period? Why, indefinitely. Some have a notion that the process exists for a certain time only; some say that every seven years changes the materials of the body; but by these preparations we clearly see that there is a *continual* absorption, a *continual* deposition, and that the material of the body is never, as it were, at rest. But the object. What can be the object of the change? The object is this,—that the animal body, instead of being a mere machine, should have the capacity of correcting and amending itself. And here I assure you, that though I speak with every possible regard for Mr. HUNTER'S opinion, I cannot fall into his idea that injury stimulates to a certain action,—for example, that a broken bone feels the necessity of a new action, and that that new action re-unites the bone. It rather appears to me that nature is thus continually reacting, and continually renewing, in order not only to repel disease, but to amend the injuries to which the body is subject, and that, in fact, the knitting together of the broken bone is not a new action set up under the stimulus of the condition described, but a continuation of that operation which is going on during every instant of our lives.

The next point, as a natural reflection arising out of the consideration of this

subject, is this,—What preserves the bone in its proper shape?—for if it be changing continually, what is there in it that is permanent? If the material of the bone be changing, and the material of the whole frame be changing, what is permanent? The subject is an extremely difficult one, and after regarding it in every light, and at every opportunity, I can come to no other conclusion than this,—that the bone is permanent, and that the life is the law upon which the production rests. If, then, the law be permanent, and the material frame is always changing, and always forming, what is old age? The idea which generally prevails is, that old age is a decay of the material, and theorists go so far in this explanation as to compare it with the decay of a building, or the dilapidation and ruin of a tower. One important fact which these preparations announce is, that animal material has no old age. For instance, you see that old age, so far as regards the approach of death, may be arrived at by a fly in the course of a few hours of a summer's evening. Man lives to threescore years and ten. There is, then, some law by which materials are destined to be shaped during successions of time occupied in infancy, in puberty, in the period of the development of man's condition, and in old age; and all this time, if there be truth in the facts asserted by these preparations, it is not the material which grows old. The material is fashioned according to a certain character, which not only indicates the individual station of an animal, but the stages and condition of animal life.

Let us pursue this subject according to the instances before us. If the bone be subject to this law, by which it can ring its changes but retain its character, shape, and form, how comes it that in other instances it will assume the form of an immense mass? Now I know that Mr. HUNTER held the opinion, and often expressed it, that amid all other changes a bone might change its shape and form; but at one period he had a notion that the same mass of specific matter would be always found. That he could not justly retain that opinion is quite clear, from such a specimen as one that is now on the table, wherein the phosphate of lime has not only acquired an extraordinary shape, but has increased in an inordinate degree. What is the cause of this? A morbid condition of the natural law of action has taken place, and instead of the natural law, which would have kept it in a proper shape and condition with a due quantity of phosphate of lime or hardening matter in it, a morbid condition, an abrogation, as it were, of the natural law has ensued, to which there was no limit, but which went on until the limb, or life itself, is destroyed.

Now, perhaps, the best example we have of this is in the condition, so familiar to us all, of necrosis. Necrosis is not, as, according to the language of the surgeon, we should imagine, the mere death of a bone, nor is it exfoliation. Exfoliation is a totally different thing. You know well, that when any material not possessed of life exists in the living body, the system is excited by it and inflammation occurs around the object. You know, also, that any part of a natural body becoming dead, acts as a foreign body, and becomes a source of irritation to the frame. Now, if a piece of cartilage appended to a bone dies, it is a source of irritation to the neighbouring portion which is alive; that portion inflames, and absorption takes place; the dead part separates and is exfoliated, coming off in leaves. Take an example from the skull. If an abscess be formed in that part, if an injury take place, the diploe within is affected; inflammation, absorption, and ulceration, take place, and at last the portion becomes a leaf in the exfoliated part. But it does not always come off in that form. The end of a bone may exfoliate in our leg, become dead, separate, and be removed from the living part in contact with it. That is exfoliation; necrosis is another circumstance.

Observe, how often we have to go back to our old authorities. Who taught us the facts respecting necrosis? It was Dr. WILLIAM HUNTER. The first case of necrosis on record is contained in the *Medical Observations and Inquiries*, and was communicated by Dr. WILLIAM HUNTER. A boy, after receiving a blow, had inflammation of the thigh. After the inflammation came an abscess, and then out of the abscess issued a piece of bone; at least there projected from the abscess an immense portion of bone. He was a poor and, in some respects, a neglected boy. He had to go to school, however, and did repeatedly go and return from school without complaining of this portion of bone, farther than saying that it tore his breeches as he pulled them on in the morning. This poor boy went continually to school with a piece of bone sticking out of his thigh, but at last it came out altogether, and when examined it proved to be the whole of the femur. Now you see this afforded quite a new idea to an observer, and it was a thing of remarkable importance. Here is a representation [*exhibiting it*] of a similar occurrence; not in the femur but in the tibia. A portion of bone stuck out, and when it was withdrawn it was

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found to be the shaft of the bone itself. The question then presents itself, How is it that a limb of so unnatural a structure is firm? How is it that a person bears upon such a limb all the time that it is so formed? How is it that the schoolboy could bear upon the limb while the whole of the bone was coming away? The explanation offered to us from to time is this—that the old bone being dead, the periosteum forms new bone. But what is the periosteum, that it should form bone? It is cellular membrane in contact with the bone, and it is, consequently, no more to the bone than the cellular membrane which surrounds the muscles, or the cellular membrane around the liver. It is no part of the bone, and I found, early in life, from experiments I then made, that I never could get the periosteum to form bone on separating it from the bone itself. I will refer you to a case which lately occurred in the Middlesex Hospital, and then observe what that case goes to establish. An operation was performed on the end of a bone in a boy, and the consequence was, inflammation and enlargement of the whole bone. The new and old bone were both alive, both vascular, and this beautiful fact was made apparent,—that when the old and the new humeri were compared, there was an exact correspondence between them. Here [*exhibiting the specimen*] you see the operation of necrosis going on. You have it *in transitu*: you see the change as it was actually taking place. You observe that the first process is inflammation, and that the second is a remarkable enlargement of the bone, and the formation of new bone in addition. Only the case containing the bone which was at first inflamed becomes dead, after which, as I stated, the very irritation of the new bone formed around it occasions an abscess within, which, having continued for some time, opens, like other abscesses, when some few pieces of bone come out, and at last the whole shaft comes away.

All this is very curious, but to me the most important and singular matter—the point to which I wish particularly to direct your attention—is this: we have seen the effect of an injury to the bone,—the production of a most extraordinary swelling upon all these hard points. But the sequestrum comes out, the cause of irritation has ceased, the bone resumes its condition, absorption takes place outside, and deposition inside, and, after a year and a half, the bone assumes its original shape and condition; and every process which the anatomist marks as for the insertion of muscles, or the origin of muscles, or ligaments, is found in the bone in a natural condition. What an extraordinary change is this! A sort of carpentry-work has been raised up, on which a change may take place; the change has taken place; the carpentry-work has been removed by absorption and deposition, under the law by which the bone is to maintain the shape and character of the tibia, the same as before. I, therefore, conceive these to be by far the most interesting series of all the facts which prove that the material of the body is continually changing; for we have not here the change of a small portion of bone, but of the entire texture—a new large mass of bone taking the place of a smaller bone, and that large mass of bone giving way to a lesser, all under the influence of that law by which the change of materials is for ever taking place.

There is a preparation here which I cannot look upon without interest,—a preparation which shows the experiment of Mr. HUNTER to ascertain whether bone grew, universally, altogether, in every part, or whether only at particular parts,—at an extremity, for example. Now observe the ingenuity of your great master. The object he had in view was to ascertain whether bone grew at the epiphyses, at the two extremities, and also at the centre, or in what proportion. He exposed the bone, made a little hole in it, and put a small shot therein. At another part he did the same thing. He measured the distance exactly with a pair of compasses, and took a note of it. The animal lived for some time, and when it was skinned, he found that the extremities of the bone had grown much more than the centre, but that the centre had grown. Now it has all along been asserted to you and the public, that the centre of bone does not grow, but only the extremities. At an early period I stated this, and was severely treated for it. A contrast was made between the modest Mr. HUNTER and the impudent young BELL. (*a laugh.*) But I find, here, in the language of Mr. HUNTER, that it is not toward the extremities alone that increase takes place, but in the shaft and at the centre also; that although the bone does not grow with much rapidity towards the centre, yet that the whole changes, and that the change shows itself, according to the law of its growth.

Looking then, gentlemen, to the change which bone undergoes, and to the continual alteration of its substance by the deposition and absorption of phosphate of lime, we might, *a priori*, suppose that bone must be subject to disease; and that, especially in such disorders of the system as arise from poor food and an imperfect assimilation of food, the bones would suffer too; that disease would attack all tissues and parts. You owe, how-

ever, the certainty of the knowledge of this fact to Mr. HUNTER. You need not go to the French authors for the information. Mr. HUNTER knew that disease would fall on any particular *tissue*, although he did not use the word *tissue*; and that disease attacks, in a particular manner, the bone, —disease which you will allow must be peculiar in almost every respect. Now here [*presenting it*] is a very valuable preparation, exhibiting the effect of mollities ossium. Here you come back, as it were, to the root of the matter, to the very data upon which the knowledge of your profession rests. You read in the "Medical Observations and Inquiries," a remarkable case of mollities ossium, where a man going up-stairs struck his toes against a step, and broke his thigh bone. You find that the surgeon attended, with all proper appliances, to the thigh bone, but the usual period expired without union being discovered at the fractured part. Accordingly he sent for his associates to comfort him in this dilemma, and they, on raising the leg, found the thigh bone break again in their hands. The disease went on and left (I was going to say a most beautiful proof) certainly a most remarkable proof of the softening of bone. The disease proceeded to such an extent, that the muscles drew upon the skeleton, and, of course, the more powerful muscles, the flexors, twisted the bone, and the man rose in bed with his heels behind the back of his head, by which time the tibia and fibula had also given way. From this condition, what with the inflammation and absorption of the bone, and such remarkable injury to all the surrounding structure, flexion of the body arose.

You have here an instance of that which you learn during the study of anatomy. If you take a bone and throw it into acid, the bone will be deprived of its phosphate of lime, and though it has to the eye all the appearance of the structure of bone, yet it does not convey a similar impression to the touch, and it possesses no weight. What acid has destroyed in the one case, disease has done in the other. There has been a morbid change; the active condition has ceased; the natural changes have stopped, the bone still retaining its form. A preponderance of absorption, however, has taken place; there has been disease attended with inflammation and absorption, and parts of the bone have been dissolved. In the preparation before you, you observe that the vessels and the membranes are vascular, but the phosphate of lime is not to be seen at all in it. That is entirely absorbed. Such is the disease called "mollities ossium," a disease which makes its attack in advanced life.

Mollities ossium is not *rickets*. Rickets is altogether a different disease. Rickets is a scrofulous disease, a disease of infancy; it is one effect of a disease which exists not only in the human body, but in that of brutes also. You know well that scrofula is often set up in infancy, and that it will produce such a weakening of the general system as to allow the child, under the influence of our unsettled climate, to become, as it were, a cripple. You know, or ought to know, that all those animals which come from a warm climate, are subject to the various effects of scrofula; they have glandular disease; they have inflammation of the lungs; they have phthisis; they have a softening of the bones and rickets. Here is part of the skeleton of a lion, the animal having died during the period of teething. You perceive the condition of the jaw; it shows the period at which the teeth arise; it shows that even in the brute, as well as in the child, the common irritation which you may suppose to be natural to the system during the rising of the teeth above the gum, becomes, in a certain state of the constitution, the cause of disease. It may be observed, that even the lion, whatever may be his strength, the tiger, and the athletic in the human subject, are all influenced by this disease. A celebrated character, a boxer, called the "game chicken," died of consumption, while, at the same time, his outward appearance was that of strength and activity; and the lion, notwithstanding his great strength, is subject to the same influence—is affected by the same incidental circumstances, under which scrofulous inflammation is set up, and death produced.

Now, having noticed the morbid condition which produces rickets, I must beg you to reflect whether rickets is the disease of the extremities of the bone merely, or of the whole bone. That disease is not shown merely by distortion; it is manifested by irregular action or secretion in the bone. You find that in the first instance it consists of a softening of the bone, so that if you take up a bone from a collection, you may ascertain that the individual died of the disease, because it is light and spongy, and because the foramina of the bone are large. But if the person outlive the disease, and die afterwards, you will generally find that the bones have assumed extraordinary weight and density in the head and extremities. The disease has been dissipated, and the bones have become enormous. The cavity of the cylindrical bones is filled up. When you look at the portrait suspended above me,

you at once recognise, notwithstanding the curly hair and easy manner of the individual, a rickety form of the body. Here is another portrait, in which you perceive the same occurrence even more remarkable. This little creature was well known about the streets of London; his name was FARRELL, but he was better known at the time by the name of "Leather-coat Jack." It is an extraordinary fact that such persons as these, on recovering from the disease, acquire, some of them, a surprising degree of strength. I have been told by a member of the Council that this individual would throw himself under a hackney-coach, and allow the wheel to go over him, for a pot of porter. He possessed such an extent of strength that he could put his arm under the thighs of the tallest man, and so carry him. He exhibited great feats of strength, such as bearing an anvil on his breast. I can more easily conceive how great was the strength of this creature, from having seen in our own time another individual who possessed a remarkable portion of strength, and who of late has been known by the name of the "Little Hercules,"—a man who exhibited himself in the Academy. He possessed extraordinary strength. The adipose membrane was deficient in his body, and every muscle could be seen in its origin, insertion, and during its play, while he exhibited his feats. This strength of muscle is but another instance of what I noticed to you relative to the correspondence which prevails between the condition of muscle and that of bone; for the bones of these rickety people acquire extraordinary density, weight, and power of resistance. I do not, for my part, see any precise cause or effect here, but still we have the remarkable fact of their extraordinary strength.

There is a great deal more to be said on this subject, and I cannot let this opportunity pass without begging your attention to the spine as concerned in the effect on the extremities; nor can I allow the extraordinary specimens of individuals before you, which to Mr. HUNTER's mind appeared of so much importance that he had them painted, to pass without farther explaining their character. I shall not, however, trespass farther on your time in this lecture, but I will resume the subject at our next meeting.

CURE OF WARTS.—ELECTRICITY.—Mr. Welch of Annapolis (America) having failed to get rid of several warts on his hands by the knife, the nitrate of silver, &c., tried electricity, and by sending sparks through them for five minutes daily during five days, caused them wholly to disappear.

HOTEL DIEU, PARIS.

CLINICAL LECTURES ON SURGERY

DELIVERED BY

BARON DUPUYTREN,

During the Session of 1833.

Revised (before translation) by the Baron himself in the fasciculi of his "Leçons Orales de Clinique Chirurgicale," published periodically by G. Baillière, Paris.

ON NERVOUS DELIRIUM (TRAUMATIC DELIRIUM).—SUCCESSFUL EMPLOYMENT OF LAUDANUM LAVEMENTS.

AN operation, Gentlemen, may have been performed in the most dexterous manner; yet, notwithstanding, the life of the patient may be threatened by the supervention of very severe accidents. Sometimes the limb which has been operated upon, or some internal organ, is attacked by violent inflammation, and the patient is carried off at the moment when we flattered ourselves with hopes of success. At other times an absorption of purulent matter takes place, indicated by shivering and an erratic kind of fever, and the cause of which is generally beyond the resources of art; sometimes irritation of the nervous system sets in, and gives rise to painful spasmodic contractions, which often terminate in a fatal tetanus; or, finally, the brain itself may be overcome by pain, terror, or even joy, and reason leaves the patient at the instant when it is most necessary to his welfare that he should remain calm and undisturbed. I wish to fix your attention to-day upon accidents of this latter kind. *Nervous delirium*, though its causes are obscure, its progress uncertain, and the symptoms through which it declares itself most alarming, is, still, rarely fatal when early and properly treated. But before entering on the considerations to which this important subject gives rise, I shall lay before you several examples of this affection, which often complicates wounds or operations.

CASE 1.—*After Fracture of the Leg.*

On the 5th of December, 1831, a man was brought to the Hôtel Dieu, whose leg had been fractured in a quarrel at some coffee-house. The limb was excessively injured; the superior fragment had lacerated the soft parts, and made a triangular opening in the skin. The fracture was immediately reduced; but the patient never ceased during the night to cry out in the most dreadful manner; in the morning he seemed

to be plunged in a state of intoxication; and while the wound was being dressed, he commenced to cry again. I could not but remark this want of courage, or excessive sensibility, in the patient, as a dangerous phenomenon, indicating the probable occurrence of some severe accident. He was bled three times in succession, and appeared something better the next morning, but on the third day his ideas became wandering and confused, and he was seized with delirium. It was the day on which the patients' friends are permitted to see them in the hospital, and hence we frequently find the condition of the former altered for the worse on the following night, from having eaten too much, or from the effects of mental emotion, &c. Should we attribute the change in this patient's health to the cause of which we have spoken, or to some other one? In fact we learned that his mind was anxiously occupied by some affair of consequence; and during his delirium he constantly repeated that his delay in the hospital would ruin him. Leeches were applied to the temples, and a calming draught was ordered to be followed by the administratration of an asafœtida lavement. These remedies were unavailing, and the patient died on the morning of the 9th of December.

The death of this man gives rise to several important questions. Did he fall a victim to one of those internal inflammations which are indicated sometimes by no other symptom than some fever or delirium? Was his death occasioned by the fracture itself, or by some important change in the nervous system? On the other hand, the judicial authorities had taken up the case, and we were required to determine whether the fracture had been produced by a fall, or was the result of certain kicks which the patient had received on the leg. As to the medico-legal question, it was not easy to conceive how a man could receive so considerable an injury in simply falling upon the ground; in the present case it did not appear probable, and even granting its possibility, the concurrence of certain circumstances would be requisite. Besides, a fracture of this kind might be produced by a multitude of different causes, such as a fall from a window, or by a carriage passing over the leg, &c.

The subsequent examination of the fractured leg showed that the limb had been violently injured; the tibia had been divided into several fragments, and the fibula broken across; the soft parts were extensively lacerated and contused; the left pleura contained a good deal of blood, and the brain was healthy.

Case 2.—*After Operation for Sarcocele.*

M. R. C., a merchant, twenty-five years of age, of a nervous lymphatic constitution, and possessing little moral fortitude, was operated on for a large sarcocele. The patient passed the day which succeeded the operation in a very great state of inquietude, being constantly disturbed by the fear of hemorrhage. On the next morning his agitation increased; the least movement, gesture, or word, tormented him. He improved, however, and was going on well, when he began to complain of pain in the limbs and in the chest; his eyes became animated, and his respiration precipitous. He insisted on getting up, and asked to eat. The intellect now became disturbed, and the patient called aloud for his family and friends. The whole body was in a state of motion; the existence of *nervous delirium* was peculiarly indicated by his cry, the brilliant eye, immoveable pupil, the face covered with sweat, and the calmness of the pulse in the midst of this general disturbance. The patient complained of violent pain in the chest, but we could not discover any symptom of disease upon the most scrupulous examination; I, therefore, prescribed the remedy which I usually employ in these cases, viz., a demi-lavement, containing six drops of laudanum, and ordered the patient to be kept perfectly quiet. This remedy had not been administered an hour, when M. R. C. ceased to speak, and fell into a sleep, which continued the whole night. Next morning he had completely recovered his intelligence, and was cured in about twenty-five days.

Case 3.—*After Fracture of the Rib.*

Langlois, a mason, twenty-six years of age, was received into the hospital for a fracture of the rib, occasioned by a fall from the first story. The chest was surrounded by a tight bandage, and little attention was paid to the patient, on account of the facility with which this kind of fracture is cured. In the third day he was seized with violent delirium; he rolled himself about in a thousand ways, and all his muscles were in a state of constant tension; the eyes were brilliant, the skin was covered with sweat, and the pulse calm. The patient was impressed with the idea, that imaginary individuals were making physical experiments upon his head, and was extremely terrified. Being of a sanguineous temperament, it was thought advisable to extract some blood from the arm, but this produced no beneficial effect; a lavement containing six drops of laudanum was then administered

with some little benefit, and the quantity was doubled next morning, without any further amelioration. As the cries of the patient disturbed those who were near him, while on the other hand he was agitated by any movement in the ward, he was removed to a room in which no other patients were received, and the dose of laudanum was carried to forty drops. The effects of the remedy now became apparent, and the delirium ceased. You can easily conceive, Gentlemen, how injurious the prolonged state of agitation must have been in a case where rest and quietness were the only means that could be beneficial. In fact, the pleura became irritated by the fragments of the fractured rib, and the lung was seized with inflammation, as was proved by the expectoration of blood, and continual cough, which were the more serious, because the exciting cause was renewed at each fit of coughing. This attack was treated by bleeding, revulsives, and calming draughts; but the convalescence was very slow. The patient remained pale and weak; he continued to cough, and had some fever, and oppression of the respiration, and when he left the hospital after two months, he still seemed to labour under the effects of a chronic pneumonia.

CASE 4.—*After Division of the Throat.*

Vincent Francis, thirty-two years of age, of a nervo-bilious constitution, determined to destroy himself on account of some disaster. With this intention he got drunk, went into the church of Notre Dame, and there cut his throat. He was carried at once to the Hôtel Dieu. The integuments were divided from one angle of the jaw to the other; anteriorly some of the muscles were cut through, and the instrument had penetrated into the pharynx, between the thyroid cartilage and the os hyoides. The patient's wound was dressed, and he was strictly watched; on the second day he was seized with delirium, and the strait-waistcoat was applied. We ordered a calming draught, which produced very little effect; in a short time, however, he recovered his reason; but the agitated state in which he had passed twenty-four hours, gave rise to some unpleasant symptoms; the patient was seized with a sensation of choking and violent cough, accompanied with the expectoration of puriform matter. On the fourth day the aspect of the wound became changed for the worse, and the delirium returned on the seventh day. The means to which we before had recourse were again employed with success. These, and some other dangerous symptoms, placed the life of the patient in considerable danger, but after fifty days of treatment he was fortunately restored to health.

CASE 5.—*After Suicidal Stabbings.*

L. le N., thirty-five years of age, hairdresser, having dissipated a large sum of money in a short time, was seized with a deep melancholy. The loss of his situation in the establishment where he worked, increased his despair, and in a moment of alienation he stabbed himself in seven different places with a scissors. The patient was brought at once to the hospital, when we bled him and ordered a narcotic draught; but the delirium continued unabated. He was bled again on the second day without any beneficial effect; he conceived that the police were in quest of him, and constantly attempted to escape from bed, when we were compelled to put him under constraint. Although the patient was thus violently agitated, the pulse was calm, and the tongue clean; his whole body was covered with perspiration; the patient's appetite was good, but he refused to eat, being constantly tormented by the idea of the police. His health continued in this state for two days, although he had been bled twice during that time, and had taken several antispasmodic draughts. On the fifth day we ordered two lavements, with six drops of laudanum in each. The delirium was immediately moderated by this means, and within six days was completely removed. Fifteen days afterwards, the patient was again brought to the Hôtel Dieu, having repeated his attempt to commit suicide. On this occasion the number of wounds was so considerable, as to resemble so many cuts of a scarifying instrument. The nervous delirium again attacked the patient, and he was treated and cured as before, by clysters containing laudanum.

CASE 6.—*After Operation on the Eye.*

Marianne R. was received into the Hôtel Dieu with a complete opacity of the crystalline humours; her sight began gradually to weaken at the age of 48 years, and at 61 she could barely distinguish night from day. The case was a favourable one for operation, and after some preparatory treatment, we performed that of keratonyxis. In the course of the day the patient vomited frequently, but this was arrested by antispasmodic draughts, and ceased entirely on the following morning. On the third day she had a good deal of headach. (Foot-bath and two lavements.) On the following days the eyes and eyelids were seized with severe inflammation; a portion of the cataract mounted up behind the right pu-

pil, there forming an opaque curtain; on the left side the pupil had lost its circular form, and the fragments of the crystalline humour, with its membrane, were seen behind it, of an intense red colour; there was also excessive pain in the eyeball. (Seton in the neck.) During the night of the fifteenth day, after the operation, nervous delirium set in in a very intense manner, and we were obliged to confine the patient. On the following morning the patient recognised those about her, but complained much of some supposed ill treatment, and answered incoherently to all questions. (Antispasmodic draughts; sinapisms to the legs.) No amelioration. On the seventeenth day the quarter of a lavement, with eight drops of laudanum, was administered; in the evening somnolence. Delirium again on the eighteenth day. (Quarter lavement, with ten drops of laudanum.) On the nineteenth day the delirium ceased, and did not again recur.

Case 7.—*After Fractures of the Lower Extremity.*

Etienne M., fifty-four years of age, received a fall from the step of a ladder, while in a state of complete drunkenness; he was unable to raise himself from the ground, and was brought at once to the Hôtel Dieu, when the house-surgeon recognised all the symptoms of a fracture of the inferior extremity of the fibula, with fracture of the malleolus internus at its base. The limb was placed in the common bandage used for fractures of the lower extremity; the articulation was much swollen, and the pain excessive On the third day the pain and tumefaction had abated, but the patient was immediately seized with violent delirium, requiring the use of the strait-waistcoat. (Quarter of a lavement, with eight or ten drops of laudanum.) On the following day the delirium ceased, and it was thought unnecessary to continue the opium; but it returned on the sixth day, and was finally combated with success by the repeated administration of the same remedy. The cure of the fracture was not retarded by this accident; the fragments were consolidated within thirty-six days, notwithstanding the constant motion of the patient, and there did not remain any deformity of the limb.

Remarks.—History of the Affection—The Quiet Pulse—Morbid Appearances—Rationale of the Treatment.

These facts, Gentlemen, naturally lead to the history of this affection, which some surgeons, in respect to its cause, call traumatic delirium, and which I am in the habit of terming *nervous*. It commences sometimes by incoherent gestures and irregular movements, but most frequently in a sudden and unexpected manner, in individuals often placed in the most favourable circumstances. The delirium manifests itself by a singular confusion of things, places, and persons; the patient is deprived of sleep, and is possessed by some predominant idea, which is generally connected with his profession, habits, age, or sex. The limbs are constantly tossed about; the upper part of the body is covered with abundant sweat; the eyes are bright and injected; the face is animated and flushed; individuals affected with this species of delirium are often so extremely insensible, that patients, with comminuted fracture of the lower extremity, have dragged off all the dressing, and walked about on the broken limb, without exhibiting any sign of pain; others, whose ribs were broken, tossed themselves about, and sung without seeming to suffer; finally, it has happened that a patient, who had been operated on for hernia, introduced his fingers into the wound, and amused himself by unrolling his intestines, as if he were acting on a dead body. In spite of the severity of the symptoms, the pulse remains calm and tranquil; there is no fever; the excretions go on regularly; there is no appetite, and the disease may terminate in death at the end of two, four, or five days; but in most cases the patient is cured. If the latter fortunate termination is to take place, the patient becomes calm without any apparent crisis, and as suddenly as he had been attacked; worn out with fatigue, he falls into a deep quiet sleep, and after ten or fifteen hours awakes, feeble, and sensible to pain, but with perfect possession of his reason, and having forgotten all that has passed; the appetite now revives, the original disease pursues its course, and continues undisturbed to the end. I should remark to you that the species of delirium of which we speak may recur two or three times after one or more days of remission, but it is always more moderate after each relapse.

The most striking phenomenon in the midst of this disturbance of the mental faculties is the quiet state of the circulation, and the absence of all febrile disturbance. You see the patient in a paroxysm of fury, his face bathed in sweat, the eyes glistening, and the voice elevated to the highest pitch; you imagine him in a state of the most acute frenzy, but touch his pulse and you find it calm and regular, while the condition of the skin removes all suspicion of inflammation; the disease is confined to the functional

power, and differs from mania only in its duration, as it is seldom prolonged beyond five or six days. Nervous persons, whose character is feeble, whose brain has been disturbed by some strong and violent conception, are most exposed to this species of delirium. Thus it frequently attacks individuals who have attempted to commit suicide, and this is so remarkable, that many pretend it is peculiar to them. Athletic men are not exempt from it; females are less susceptible of the disease, and it has not been observed among children. Nervous delirium may of itself be a source of great danger to the patient. I have seen a young man of vigorous constitution, who was attacked with delirium after a slight scratch on one of the toes, and died within forty-eight hours; the exciting cause of the disease not seeming to have contributed in the least to his death.

However, in a great majority of cases we should estimate the danger of the delirium by the severity of the accident which gives rise to it; and we have to dread a fatal termination when it succeeds a fracture of one of the long bones, or of a rib, or any extensive wound about the neck, much more than after simple wounds of a less dangerous nature.

On examining the body, we do not find, either in the brain or spinal marrow, or even in any other organ, any material changes sufficient to explain the disorders which have taken place during life, or the death of the patient. Soothing remedies of every kind, and in every form; bleeding carried so far as to cause fainting; revulsives, and all other means which I, as well as others, had for a long time employed, remained inefficacious against the disease,—neither diminishing its severity, nor retarding its progress. Narcotics, Sydenham's laudanum, when given by the mouth, are equally unavailing. Physiology explains in a great measure this want of action; the stomach, destined as it is to prepare the first elements of nutrition, is possessed of a powerful digestive force, and contains fluids which alter, more or less, all substances with which it comes in contact; hence many remedies, when introduced into the stomach, do not produce any effect, because they are mixed with the alimentary matter, and various substances, especially vegetable ones, are uncertain in their operation, or totally inefficacious in a multitude of cases. The inertness of these remedies, and the knowledge which we possess of the modifications produced by the stomach on medicinal substances, have induced me to prefer a means which has constantly been successful, and to which I am inclined to attribute some specific action; it is at once simple and powerful, and consists in the administration of a few drops of laudanum in a lavement; five or six drops of laudanum, introduced in this manner, will have more effect than three times the dose if given by the stomach; the reason I have already explained to you; I may also add, that the rectum, being destined as a reservoir for the remnant of the nutrient materials, absorbs without digesting; and remedies applied in this manner, if they are not too soon expelled, arrive with greater certainty in the general mass of the circulation. The clysters should be repeated every six hours, two, three, or four times; and, if they are retained, do not fail to remove the most furious delirium.

CASES OF

STONE IN THE BLADDER,

CURED BY

LITHOTRIPSY.

By Baron Heurteloup.

To the Editor of The Lancet.

Sir,—Since my return from Paris I have performed the operation of lithotripsy upon a considerable number of patients. The history of their cases, followed by clinical remarks, may, perhaps, prove interesting to your readers. I herewith forward you three, requesting you to insert them in your widely-circulated journal.

When I was in Paris, about six months back, as a competitor for the Monthyon prize, the Baron Dupuytren, who formed one of a committee chosen by the Institute to investigate my claims, urged some arguments calculated to induce me to apply to the *percuteur courbe à marteau*, as a substitute for the hammer, the pressure of a screw, intimating that I might thus do away with the *rectangular bed* and *fixed point*. This suggestion on the part of Baron Dupuytren gave rise to a letter from me, in which I have explained the reasons that induced me to prefer, and persist in, the application of the hammer to that of the screw. The reasoning, adopted with a view to determine the comparative advantages of those two methods of proceeding, was conclusive, since the Academy, after mature reflection and investigation, awarded me the first prize of the year 1833.

Similar arguments to those adduced by the Baron Dupuytren on this subject hav-

ing been brought forward by many members of the profession in this country, you might, perhaps, consider it likely to promote the interests of science, to give place in your journal to the remarks which I had the honour of submitting to that distinguished surgeon. If you think that a letter on this subject would be of any use to those who feel interest in the progress of *lithotripsy*, you will, perhaps, have the goodness to let me know, and I will, as soon as a translation of it is made, forward it to you.

The letter is rather long, eight printed pages, but in the event of your inserting it, you will act as you think proper as to dividing it for one or more numbers. I have the honour to be, Sir,

Your obedient servant,

HEURTELOUP, D.M.P.

18, Holles Street, Cavendish Sq.,
March, 1834.

CASE 1.—*Numerous Calculi at the Neck of the Bladder.*

John Gladdin, a gardener, sixty-two years of age, observed, that whilst discharging the duties of his office, he felt frequent and urgent desires to make water; about a year after the appearance of these first symptoms they increased in severity, and soon were accompanied by acute pain, which compelled him to give up his laborious occupations. The patient addressed himself to Mr. Granger of Burton-upon-Trent, who, upon sounding, discovered a stone in the bladder. Having heard of several operations which I had performed at the Derby Hospital, Mr. Granger sent the patient to Mr. Wright, surgeon to that institution, who kindly reserved him until I came to Derby, in order that I might operate upon him publicly. Being anxious to go to France accompanied by a patient, to show my countrymen the new method of operating by percussion, I requested the surgeons of the hospital to allow me, provided I obtained the patient's consent, to perform the operation in Paris instead of Derby. To this they willingly complied, as did the patient. He came to London, from whence he accompanied me to Paris.

The members of the Committee named by the Institute to examine the result of my labours, being made acquainted with my intention to perform an operation before them, assembled a few days after, to witness the preparatory examination, and afterwards the operation.

The urethra was very small, but not sensitive; the bladder moderately dilatable, and presenting beneath the neck a considerable depression, proceeding from the spareness of the patient. Situated in this part of the bladder were several calculi, from eight to ten lines in diameter, smooth, of a rounded shape, hard, and yielding to the hand the sensation of their collision one against another.

The smallness of the urethra required the use of a small *percuteur*; the one employed was about two lines and a half in diameter, notwithstanding which, in the first application, several of these calculi were seized and broken. Their hardness was such as to require very powerful blows of the hammer.

A few days after, a second application of the same instrument was performed; one or two more entire stones, and several fragments, were broken, which completed the cure of the patient. The Baron Dupuytren examined the bladder repeatedly, without detecting the smallest remnant of calculus.

Clinical Remarks.

When Gladdin arrived in Paris, I could not help feeling a little uneasy respecting the result of the operation; for during the journey he complained of a feeling of suffocation, which was for some time after accompanied by a catarrhal affection; with the stethoscope, a rattling noise might be distinguished at the inferior part of the left lung, at which spot there was a dull sound rendered on percussion. After the second operation, however, which afforded him complete relief from his stone symptoms, the general health materially improved, and particularly as regards the cessation of a slow feverish attack, which used to come on occasionally in the evening.

The steps of the operation were not difficult; the depression behind the neck of the bladder, which generally exists in spare subjects, facilitated the seizure of the stone and fragments, which were usually assembled at this spot. When this depression is an irregular sac or pouch, or the result of a large prostate projecting into the bladder, instead of facilitating the operation, it renders it more difficult.

Gladdin, before he quitted Paris, was presented at a public meeting of the members of the Institute, who, upon the proposal of the Committee, awarded me the first prize of surgery for 1833.

CASE 2.—*Combination of Lithotripsy and Lithocenosis.*

Mr. M'Combie, of Aberdeen, aged sixty-three, a cattle dealer, commenced voiding gravel about twelve years ago. At first it had the appearance of red sand, but gradually the grains enlarged to the size and somewhat the appearance of mus-

tard seed, and subsequently became as large as small peas. Occasionally all the symptoms of acute nephritis accompanied these evacuations of gravel. Between three and four years back, the patient ceased voiding calculi, and about the same time experienced symptoms of stone in the bladder; the increased severity of these symptoms induced him to be sounded; he addressed himself to Dr. Thomson and Mr. Turner at different periods; but these gentlemen did not, at the time they sounded him, detect any stone; a treatment was prescribed, which considerably allayed his sufferings. Dr. Thomson added, as his opinion, that if even there were a stone in the bladder, which he considered possible, he would not advise Mr. M'Combie to submit to the operation of lithotomy, which in his case would be attended with more than ordinary risk. In the summer of 1833, the patient, finding the symptoms continue, was sounded by Mr. J. Morrison of Tillyfour, who distinctly felt a calculus. He immediately set out for London and consulted Mr. Brodie, who discovered the stone, and had the kindness to recommend the patient to me.

By the *methodical catheterism* I found a large urethra, accommodating itself readily to the introduction of straight instruments; a very deep bladder, having its *bas fond* considerably raised by the mass of adipose matter contained within the pelvis; an enormous prostate, which might be easily distinguished with the finger in the rectum, projecting into the cavity of the bladder. A considerable quantity of water might be injected; but without giving much room at the *bas fond* of the bladder, the posterior part of which advanced towards the neck, especially during the contracting of that viscus. There were several calculi in the bladder, of nearly an inch in diameter; they were lodged in a sort of depression formed by the prostate, in which situation they were with difficulty felt with a large curved catheter, but could be touched and moved with the *recto-curvilinear catheter*. The inclinations to make water were very frequent, and the sensibility of the patient was great.

I proceeded with the operation, however, and notwithstanding many unfavourable circumstances which this case presented, succeeded in breaking down and bringing away these calculi. This result was obtained by combining together the resources of *lithotripsy* and *lithocenosis*. It would be too tedious to enter into the minute details of this operation, as it was necessary, in order to meet the difficulties which arose, to have recourse to various means.

Clinical Remarks.

This is another case in which may be observed the cessation of voiding gravel as soon as the symptoms of stone appeared. What is the cause of this so frequently occurring? There were many difficulties to contend with in this case; but among the greatest may be ranked the extreme sensibility of the patient, which required great promptness in the manipulations, as he could not have endured the operations to be continued more than from two to three minutes. Had not this point been strictly adhered to, it is doubtful, in my mind, whether lithotripsy would have been successful. Another difficulty was the enlargement of the prostate, which by creating a cavity or depression behind it, in which the stones were partially connected, interfered materially with their seizure. After the second application of the instrument, the stream of water, which was very feeble and small before the operation, became still smaller, until at last the patient could not pass his water without the assistance of a catheter. This resulted from the still further enlargement of the prostate, either in consequence of the contact with the lithotriptic instruments, or with the fragments of stone. Mr. M'Combie was compelled to draw off his water during the whole of his treatment, and even when he left London he made water with difficulty. It was only between two and three months after that the urine passed freely, when the prostate, by diminishing in size from the removal of the stone, offered no further obstruction.

Mr. M'Combie was dismissed cured, in the month of September, 1833, and I received a letter at the end of February, 1834, from his medical attendant, Mr. J. Morrison, who states that the patient rides on horseback without any inconvenience, and that the functions of his urinary organs are re-established.

I will briefly allude to the opinion of Dr. Thomson, who considered the operation of lithotomy dangerous in this case. In fact, the quantity of fat accumulated in the pelvis, the considerable enlargement of the prostate; the depth at which the bladder was situated; the number of the calculi, some of which from their small size, might have eluded the forceps of the lithotomist — these circumstances, added to the dread which the patient had of lithotomy, would lead us to fear an unsuccessful termination had it been performed. Lithotripsy, therefore, has been successful where the result of lithotomy would have been very doubtful.

CASE 3.—*Combination of Gout and Stone.*

Mr. G. Short, seventy years of age, rather lusty, and of full habit, but of a pretty good constitution, has been for a period of thirty years subject to attacks of gout, occasionally sufficiently severe to confine him to his bed for a considerable length of time. The joints of the lower extremities have most frequently been the seat of these attacks. After the space of about two years he commenced voiding small calculi, composed of lithic acid almost pure; round, smooth, and resembling very small peas. This continued more or less until about three years ago, when he experienced for the first time unusual sensations in the bladder, and from this time he ceased voiding gravel. Finding that these sensations became more and more severe, and that there were irregularity and stoppages in his stream of water, he begged his medical attendant, Mr. Brown, to sound him. A stone was discovered, and the patient, at Mr. Brown's recommendation, came to London from Sydenham, where he then resided, and placed himself under my care.

On sounding Mr. Short, I found a large and moderately-sensitive urethra, a rather capacious bladder, containing several calculi, probably four or five, which were smooth, moveable, composed of lithic acid, and varying from three-quarters to a little more than an inch in diameter. Although the bladder was regular in its conformation, there was behind the neck a considerable depression, in which the calculi were usually found on introducing an instrument; from this situation, however, they might be easily removed with the *recto-curvilinear* sound.

In the first application of the *percuteur* which lasted about three minutes, three of these stones were broken down, and a considerable quantity of powder and pieces was brought away by means of the *evacuating catheter*.

In a second application of about the same duration, two other entire calculi and some pieces were comminuted. The result obtained was also very satisfactory. Nearly two drams weight of stone were voided through the catheter: rather more than at the first time.

I was about to perform a third operation four days after, but was prevented by the patient complaining, on the night previous, of considerable pain in the tibio-tarsal articulation of the right leg, accompanied by swelling of the joint and general feverish excitement. Two or three days after, the bladder became irritated, and there was a considerable mucous deposit in the urine, although the pain experienced was not very acute. I considered it right, however, to let him remain perfectly quiet; and after having gone through all the stages of an attack of gout, similar to those to which he has been subject, the irritation subsided, and in a short time he was in a fit state for the operation to be continued with safety.

In two other applications of about three minutes' duration, the stone that remained was entirely removed, and the patient returned home free from any painful sensation.

Clinical Remarks.

It was with the fear of seeing the treatment interrupted by an attack of gout, that I undertook this case. This is what occurred, but the irritation resulting from it was not so great as might have been expected. Persons affected with stone, and subject at the same time to gout (which is by no means an unfrequent coincidence), require the greatest care as regards the operation; for any increase of irritation may bring on an attack of gout, in which the bladder sometimes participates. It is in such cases as these that the operations must be performed promptly, and in which useless and long-continued manipulations may be most injurious, by inducing the consequences stated above.

Another difficulty in this case was the size of the prostate, which prevented the water from having free issue, and thus carrying out the fragments of stone; it was therefore necessary to have recourse to *lithocenosis*, or that part of the operation which consists in extracting the broken portions of stone from bladders which have not the power of expelling them, and which has been so fully explained in THE LANCET.

CONTRIBUTIONS TO PATHOLOGY.

No. IV.

By JOHN ALEXANDER, *M. D.*,

One of the Medical Officers to the General Dispensary for Children, Manchester.

THE CEREBRAL PATHOLOGY OF CHILDREN.*

WHILST it cannot be denied that a variety of infantile ailments are occasionally without justice referred to a cerebral origin, it is equally certain that disturbance of the nervous system, and brain more especially, plays a frequent and prominent part in the diseases of early life.

* Read to the Pine Street Medico-Chirurgical Society, Manchester.

A child's age often precluding that collateral information which is so valuable to the pathologist, it not unfrequently happens that the physical signs are the sole indices by which we are enabled to detect the presence, appreciate the changes, and regulate the treatment of cerebral disorders in the young. Moreover, whatever may be thought to the contrary, pathology, as deducible from the complaints of childhood, when compared with that derived from the diseases of a more mature period, presents many and interesting modifications. Hence the most intimate acquaintance with the symptoms which attend upon affections of the head, indeed upon all diseases in children, is obviously indispensable; and if the interest of any inquiry is fairly measured by the importance of the subjects it embraces, or the consequences to which it may lead, few branches of practical medicine present a better claim than does infantile cerebral pathology to our earnest consideration.

Before, however, entering upon the individual cerebral diseases attendant upon early life, it will, I apprehend, be useful to determine, if possible, the *sources* whence children derive their proverbial liability to disorders of the head. Is not much of the explanation to be found in the large comparative size which that part of their frame is observed to possess, and the immature condition of that portion of the nervous system which it contains? The brain receives a greater relative quantity of blood than any other part of the human economy. It was calculated by the illustrious Haller, that the carotid and vertebral arteries carry thither no smaller a proportion than from a third to a half of the whole blood flowing through the aorta. The proportion in children is still greater than that in the adult; and when we consider their rapid vascular circulation, and reflect upon the soft, pulpy, unfinished state of the cerebral mass in children, the fact of their being so liable to disturbance, instead of exciting our surprise, is in some measure anatomically accounted for.

An acute observer, M. Sadelot, physician to the *Hôpital des Enfans*, has lately, however, remarked, that in many children who have died, apparently with symptoms of hydrocephalus, dissection has presented no other pathological condition than appertains to *morbid hypertrophy of the brain*. From which Sadelot and others have drawn the inference, that mere *cerebral size* (to which the child, *they* conceive, is peculiarly disposed) forms a common excitant of functional disorder in the young. Development of the brainacular mass is not unusual, and *may*, I can easily conceive, be conducive of symptoms akin to those of hydrocephalus; at the same time candour compels me to acknowledge, that I do not recollect any inspection affording an unquestionably genuine and unmixed example of this simulative disease.

Again, many of the functions of life are actively operative during fœtal existence; nor do we apprehend that any part of the cerebral mass, functionally or formatively regarded, is idle, whilst the child is in the womb. But although those divisions of the fœtal head which preside over the natural and organic functions, be admitted to be in a certain degree operative, it will, I think, be granted, that the chief function of the brain—the mind—is altogether undeveloped, and that by inference, a considerable portion of the cerebral mass is comparatively inoperative during uterine life. Hence it results, that as soon as a child sees the light, its brain is not merely subject to the increased action of those powers which had hitherto accompanied its organization; but, stimulated by the impressions of five new senses, gradually aroused into play, and by degrees taking upon itself the function of thought for which it was designed, cerebral disorder becomes the disturbance to which the young child is also physiologically prone.

Dr. Walker, in an able paper recently published in the "Transactions of the Provincial Medical and Surgical Association," makes the following remark: "Pathologists have hardly, I think, attached sufficient importance to *the peculiarities of infant organization*; and the influence which they exercise on the character of the morbid phenomena which occur at that period." Concurring fully in Dr. Walker's sentiment, let us now proceed to glance at a few of the ordinary *excitants* of infantile cerebral disorder.

No sooner does the infant commence taking its *mother's milk*, than a prolific cause of nervous derangement arises from the frequently indifferent state of that fluid in females accustomed to the cheerless boards of wretchedness, or the artificial habitudes of fashionable life. Justly has it been said, that extremes often meet; and, perhaps, if the breast milk of the dissipated daughter of fashion, and that of the half-fed pauper, could be submitted to a conclusive comparison, the latter would not be found the least calculated for the due nourishment of the young. The lacteal secretion, although an elaborate one, is markedly (perhaps more than any other) under the influence of the nervous system, and should fright, anxiety, passion, in a word, any intemperate mental emotion, agitate the mind of the mother, how easily is the disturbance conveyed to the child!

Again, if the parent labour under bodily disorder of any kind, it is equally easily transmitted through the same mysterious medium; and, predisposed as we have affirmed the young child anatomically and physiologically to be, the present cause of cerebral disturbance will not altogether be unappreciated.

In the course of a few months a new excitant of cerebral disorder presents itself in *dentition*, which, according to Arbuthnot, we are to regard as the source of a tenth of the whole mortality of children. The irritation going on in the mouth, is conveyed through the medium of the nerves to the neighbouring sensorium; and the degree of effect produced upon the latter appears to depend chiefly on three circumstances,—the general health of the child, the slow or rapid course of the teeth-cutting, and, more particularly, on the state of the bowels. Disturbance of a child's economy is not invariably disease. The diarrhœa attendant upon dentition, as well as certain cutaneous eruptions, instead of being morbid actions, are most frequently salutary operations of the vis medicatrix naturæ; and should, therefore, not inconsiderately be opposed. But we are digressing. Many writers have affirmed that the cutting of our teeth being a natural process, should not generally be regarded as a source of danger to the young. Of this opinion were Drs. Cadogan and Armstrong. But granting, for a moment, that, living according to the simple habitudes of nature, a child would pass through this trying period of its existence without either suffering or danger, does the acknowledgment affect the observed fact, that fevers, convulsions, and, most especially, affections of the head, are daily arising from this particular source of disturbance? I apprehend not, and therefore class dentition as an excitant of cerebral disorders in the young.

There is an *hereditary* or specific excitant of head diseases in children. If a disposition to the gout, a strumous diathesis, or a tendency to mania, can descend from parent to child, no less certainly can a predisposition to cephalic disease. Were this denied, how could we satisfactorily explain the frequently-observed phenomenon of several children, members of the same family, living to a certain age, and then almost as certainly becoming indisposed? The period of aggression may and does vary—the particular symptoms in the several children may and do differ; but still the observant practitioner cannot fail to regard the whole nursery as one threatened (I had almost said destined) to be sooner or later attacked by cerebral disease. What the exact status or condition of the head constituting this unfortunate predisposition may be, I presume not to affirm; but an experience not the most limited, and the concurrent testimony of preceding writers, incline me to the belief, that young persons possessing large heads with imperfectly-closed sutures, black or blue eyes, a pale, pasty countenance, and what are generally termed the nervous and melancholic temperaments, are those most physically disposed to take on cerebral disease. It may, perhaps, be thought that children of the sanguineous temperament should, on a prima-facie view of the matter, be those most liable to cerebral disturbance. The presumption is natural, and one I formerly entertained, but extended observation leads me now to dissent from the opinion; for although I well know that sanguineous children are prone to cerebral disorder, I conceive that they are so, simply from the delicate structure attendant upon their age, and not from possessing the *peculiar* predisposition to which we are at present more particularly alluding. Discrepant, however, as opinions may be on this point, it appears indisputable that cerebral disorders are more manageable and curable in the sanguineous than in the other temperaments which the human race presents. On this subject we may possibly hereafter enlarge, when, in the consideration of the particular affections of the head, cerebral disorders dependent upon specific constitutional derangement come to be treated.

We have affirmed, at the commencement of this paper, the mind to be the especial function of the brain; hence it should result, that over-mental exertion would occasionally operate in the young as an excitant of cerebral disorder. Is not this the fact? At the present day, when a wish for intellectual precocity in our children seems almost universal, *this* cause of cerebral disease, though little suspected, is, I fear, not unusual; might it not be said but too common? What would be thought of that parent who encouraged her child to assume the erect posture before the muscles and bones of its delicate limbs were equal to the position? The idea would be deemed preposterous, and the practice deprecated: yet not less mistaken is the conduct of those who subject their offspring to mental exertions, for which they are altogether physically unprepared. The brain of early life is of delicate consistence, soft—in a word, unformed, and if called upon to discharge an arduous office, like that of thought, too early, too often, or for too protracted a period, its development may, it is true, be furthered, but its wholesome integrity

will assuredly be impaired. We may compel the vine of the hot-house to yield its fruit a little earlier by a great increase of the temperature to which it is subjected, but the health of the plant is irreparably injured. Universal observation justifies the assertion, that a clever manhood rarely follows a precocious youth; and it is one of my most settled convictions, that the less severe mental exertion we entail upon our offspring during the first ten years of their existence, the better chance have we of a healthy childhood, and the more certain guarantee for a creditable after-life. "The body of man," says a late pleasing writer, "may be considered as the carriage of the mind. The former will last a long time, if the latter sit quietly in it; but if, on the contrary, the mind is anxious and restless, the lining of the carriage will soon be worn out." The very precocity which many children evince is dependent (in the eye of the physiologist) on the delicate cerebral organization which engenders, and the peculiar temperament which encourages, it; and no fact is better established than the truth, that those minds which open to knowledge gradually, are those which ultimately attain the most desirable state. It is told of the celebrated Isaac Barrow, that, until fifteen years of age, his favourite employment was swinging listlessly on a gate, and that his father made the following remark to a friend casually visiting him:—"If it should be the will of Providence to deprive me of any one of my large family, I could best spare Isaac; for he neither knows, nor seems disposed to learn, anything." It is scarcely necessary to add how Barrow's after life falsified the inconsiderate prediction of his parent.

As the young child's brain presents so great a relative magnitude, it is obvious that when the general system is disturbed, as in fevers, inflammation, &c., *that* organ will naturally be prone to suffer determination towards it. Congestion in its substance, or effusion into its ventricles, is of constant occurrence; and from the same individual circumstance it is, that convulsions of a general character, wherever arising, or by whatever induced, are apt to lead to cerebral disorder. Nor are there wanting diseases which appear to more particularly affect the child's brain. Of this latter description we see examples in malignant scarlatina and confluent small-pox. In fact (and to conclude this hasty glance at some of the *excitants* of cerebral disorder in the young), whatever accelerates, retards, or deranges the circulation—whatever irritates or obstructs the glandular system, and by so doing diminishes, suppresses, or unduly increases, the various secretions—and, especially, whatever tends materially to affect the nervous system, either in its origin or its ramifications, is inductive of infantile cerebral disorder. Hence its frequency in the nursery, and its importance to the practitioner.

Having thus cursorily glanced at a few of their physical and moral sources, let us proceed to *individually* consider those derangements to which the child's head is more particularly liable; adverting to them in the following order:—

- α Encephalocele, or cerebral hernia.
- β Encephalitis, or acute hydrocephalus.
- γ Cerebral congestion.
- δ Chronic hydrocephalus.
- ε Epilepsy.
- ϛ Chorea.

Of *encephalocele*, or cerebral hernia, surgical writers may be said to have described four varieties:—encephalocele from imperfect cranial ossification; encephalocele from a double deficiency of bones and scalp; encephalocele from a morbid action destroying the cranial bones; and lastly, encephalocele succeeding to the use of the trephine. Each of these varieties, arising from a distinct cause, naturally presents some peculiar features.

The characters of the *first* form (which is at once the most common and the most simple) are as follows:—a soft, smooth, unfluctuating, undiscoloured, round tumour is observed on the head, having a pulsatory action correspondent with that of the arterial system. On compression it can be made to almost disappear, and its general situation is in the course of the sutures and fontanelles. In the majority of cases it is not by any means a formidable disorder.

There are few children, however, presenting the complaint, in whom the general health does not appear indifferent, either from congenital or acquired causes. This being the case, besides employing a compress containing sheet-lead (sewn into the child's cap), according to the plan proposed by Ferrand, and recommended by Sallinenve and Calliperi, an alterative treatment to improve the intestinal secretions, and a nutritious diet (or weaning, if the mother's health or child's age be such as to call for the change), should be adopted. By these simple means the cranial hernia is kept reduced, the general health invigorated, and due ossification (the natural cure of the complaint) favoured. Should, however, ossification not follow our remedial means, there is no reason for great alarm, as a case is recorded of an individual who had this species of hernia thirty-three

years without material injury to his health or any impairment of his mental faculties.

It not infrequently happens that encysted tumours of various kinds form on the head of a young child in the course of the sutures and fontanelles. From their similarity in site, colour, and consistence, they might possibly be mistaken for cranial herniæ, were not their diagnostic characters borne in mind. These tumours are rarely congenital; the hernial ones are generally so,—the former are not reducible, whilst the latter are in a great measure so; and, lastly, the steatomatous tumour does not pulsate, which the encephalocele is easily observed to do. That the necessity, however, for careful diagnosis is not imaginary, the following extract from Richerand will prove, at the same time that it demonstrates that the cerebellum as well as the cerebrum is liable to protrusion.—"In the year 1803 two cases of protrusion of the cerebellum occurred in Paris. In one, Professor Lallement mistook the disease for a common tumour, and commenced an operation for its removal, when after making some of the necessary incisions, his proceedings were stopped by seeing the white silvery colour of the dura mater, and that the swelling came out of an aperture in the occipital bone. The day after the operation the child was seized with violent pain in the head, had a hard pulse, prostration of strength, vomiting, &c., and died in the course of a week. On dissection, a part of the sensorium, and an elongation of the two lobes of the cerebellum, about as large as a nut, were found in the protruded sac of the dura mater. Several abscesses also were discovered in the substance of the cerebellum. The other example fell under the observation of M. Baffos, principal surgeon to the Hôpital des Enfans. Upon the death of the child the dissection evinced similar appearances."

The second form of encephalocele I have mentioned, viz. that in which both the cranial bones and scalp are wanting, has been justly termed rather a malformation than a curable affection. Indeed most children presenting it are either still-born or very short lived. "A remarkable instance of this disease," observes Mr. Samuel Cooper (to whose indefatigable industry, by the way, medical literature is most deeply indebted), "was published by Dr. Burrows. The scalp, the os frontis, the parietal and a great part of the occipital bones, were wanting. The cerebrum, which projected through the deficiency, was of a mulberry colour, and the tumour was adherent at its neck to the edge of the integuments. The child lived till the sixth day of its birth, it had no power of voluntary motion, and all the secretions were stopped."

The two last-mentioned varieties of encephalocele being more frequent in the adult than the child, call for no particular comment in this paper. It may not, however, be deemed foreign to its province to state, that widely-different opinions seem to exist amongst medical writers as to the the third form, viz., that arising from *morbid action*, which is generally an affection of advanced life. The late Mr. Abernethy, Mr. Stanley, and Dr. J. Thomson, appear to have considered the absorption of bone and subsequent hernia to be an effect of a morbid action in the *brain itself*, and have adduced several interesting cases in support of their opinions; whilst other pathologists have regarded the cerebral symptoms attendant upon the disorder as *produced by the hernia*, and not inductive of it. Mr. Abernethy's arguments are sufficiently conclusive to the mind of the present writer, but appear not to have been equally so to individuals infinitely better authorised to form a decided opinion on the matter. It therefore remains for future pathological inquiries to determine which party has entertained the more correct view. "*Sub judice lis est.*"

We shall next proceed to consider acute hydrocephalus, at once the most interesting and most besetting disease of childhood.

PHRENOLOGICAL SOCIETY.

Session 1833-34.

Dr. Elliotson, President.

RAPHAEL'S AND OTHER SKULLS.

Dec. 16th, 1833.—G. Taylor, Esq., M.D., was elected an ordinary member. The cast of the skull of Dr. Spurzheim was presented to the Society by the Phrenological Society of Boston in America, and examined and discussed by the members. The President also laid before the meeting a skull which had been presented to him by the American Society, said to have belonged to a remarkable person, and transmitted to him (Dr. E.) for his opinion thereon.

Mr. Deville mentioned, with reference to the statements which had lately been current, of the tomb of Raphael having been opened, and a skull found in it, notwithstanding another skull had for several years been considered to be that of the great painter, and had had casts taken

from it and disseminated extensively, apparently in complete phrenological harmony with the endowments and character of Raphael, that many years ago, when the skull hitherto supposed to be that of Raphael was brought to light, a gentleman, Mr. Flaxman, told him that some day or other there would be a doubt thrown on the authenticity of the skull, because other bones had got mixed with those of Raphael in the tomb.

Mr. HERING laid a skull before the Society for the expression of their opinion. It was at once pronounced to be that of a person of a most violent disposition, perhaps of a murderer; and this, as well as other points mentioned, were declared by Mr. Hering to be perfectly correct.

Jan. 6th, 1834.—W. CHURCHILL, Esq., Barrister, V. P., in the chair. Mr. John Burroughs was elected an ordinary member, and as it was "twelfth night," and there were but few members present, the Society was adjourned.

PHRENOLOGICAL DEVELOPMENT, CHARACTER, AND HISTORY, OF JOHN CONRAD BRUNS.

Jan. 20th.—The casts of the heads of Chevallier Neukomm (the musical composer) and Mr. E. Schultz were presented to the Society by Mr. Drew.—Mr. Pocock and Mr. Chappel were proposed as ordinary members.—Mr. Hering exhibited the cast of an individual to the Society at the meeting of the 6th, but not having communicated any particulars respecting the person on whose shoulders it had rested,

Mr. DREW, this evening, offered a sketch of the character of the party, to the members who he hoped would be willing to allow the meetings to be occupied from time to time in this way, because (he observed) people who were ignorant of phrenology often objected that when an individual was known, it was easy to say that the organization of his brain agreed with his character; whereas, if the character were deduced only, all who knew the person were able to judge whether it was so correct that the grounds of the deduction must be real. Assent being obtained to his proposal, Mr. Drew commenced by hoping that so minute and accurate an account would not be expected from him as from a highly accomplished phrenologist, and that visitors would not expect more from phrenology than it was capable of accomplishing. The head he pronounced to be large; the general development to indicate considerable energy of character; the temperament to appear active. The coronal region, especially at *firmness*, *conscientiousness*, *benevolence*, and *hope*, was well developed, so that he (Mr. Drew) concluded, that the individual must have been firm, independent, charitable, and a stanch contender for justice. *Love of approbation*, *secretiveness*, *acquisitiveness*, and *destructiveness*, however, were also large, so that he conceived there would occasionally be a struggle between those feelings and the dictates of morality. He appeared (we employ Mr. Drew's words) to have been very passionate and earnest, and in some cases very decided, and even stern, but his benevolence and conscientiousness must have prevented him from being cruel and unjust. There must have been great intrepidity in resisting any oppression or attack. He is likely to have been disputative, and fond of opposition, and when he thought himself right, it could not have been an easy matter to set him down. He possessed more of a moral than a religious character. *Caution* being rather small, comparatively, in many cases he probably was apt to be precipitate and rash. From this deficiency, and the large *acquisitiveness*, *hope*, and *self-esteem*, he very likely was a speculative and enterprising man. From his large *ideality*, *firmness*, and *destructiveness*, there must have been great enthusiasm in his character. *Philoprogenitiveness*, *amativeness*, and *attachment*, did not appear particularly large, though the first, on one side, was unquestionably well developed, and many members, upon attentive examination, considered it large. The perceptive organs were all well developed, and from this and his endowment of feelings, he would be a man of action rather than of reflection. *Form* and *constructiveness* are large, and there being a good development of *causality* and *imitation*, he must have been mechanically ingenious, and might even have been an inventor of machinery. *Order* was large, and so was *number*. His intellectual endowments were generally good. *Mirthfulness*, or *wit*, was large, and, from his large *destructiveness* and *sensitiveness*, his wit would probably be sarcastic, though his large *benevolence* would prevent all sustained ill-nature.—Mr. Drew had accidentally omitted to speak of the development of the organs of *marvellousness* and *music*. The size of the former was considered large by the Society, and the latter to be well developed.

Before concluding, Mr. Drew pointed out a mode of drawing lines on the head, preferable to that generally adopted, and which he learned from Dr. Spurzheim. Instead of the old lines, dividing the head into anterior and posterior, and sincipital and basilar, regions, one line should be drawn, at the side of the head, upwards,

exactly at the posterior margin of *constructiveness*, so as to have the whole of the anterior lobe before, and of the middle lobe behind, it; and it should pass before *acquisitiveness* and behind *ideality*, ascend between *love of approbation* and *conscientiousness*, and terminate at the posterior margin of *firmness*.

Mr. Hering then addressed the members in the following words:—Mr. Drew having kindly favoured the Society with his opinion of the phrenological development of the cast of Bruns, now before us, I will proceed to state such particulars as I have been able to collect concerning the individual in question, who is in attendance in case the members of the Society should wish to ask him any questions. I beg your indulgence for the cursory manner in which this sketch is drawn up; for more minute particulars, I refer to a pamphlet published for his benefit, entitled "The Miller, Conrad Bruns, or a Tale of Hanoverian Magisterial Oppression and Persecution," to the truth of which an affidavit was made before Alderman Ansley in July 1831. My attention was first attracted to Bruns, from hearing that he had manifested very singular firmness and perseverance in endeavouring to obtain redress for wrongs inflicted by a petty magistrate of his native village, through whose oppressions he was reduced to extreme poverty and distress. John Conrad Bruns was born at Suderbruch Neustadt am Rübenberg, Hanover, and is the son of a farmer. He remained at school in his native place until his fifteenth year, and was always regarded as one of the most clever of the scholars, excelling particularly in arithmetic. His memory was also so retentive as to enable him to repeat many chapters of the Bible, and long pieces of poetry, with very little study. In the early part of his life he was engaged in assisting his father in farming, and afterwards held for three years a situation in the riding school and royal stables at Hanover. War breaking out, he enlisted in a corps of engineers, and gained much credit for his mechanical ingenuity. He also formed one of the band of the corps, being a good player on the clarionet and the trumpet. Having, at the age of twenty-seven, obtained his discharge from the army, he returned to his native place, married, turned miller, and constructed a mill on a peculiar principle of his own invention. His business went on flourishingly for eight years, after which period a train of misfortunes and persecutions occurred, in bearing up against which his possession of the faculty of firmness was strikingly manifested. The success of Bruns excited the envy of a neighbouring miller, who was a relative of the upper bailiff or magistrate of the place, in consequence of which every obstacle was thrown in Bruns' way, and ultimately his mill was shut up; against which oppression he appealed three times in vain. He was also imprisoned on a false charge of theft. When released he proceeded to Hanover, and entered an action against the bailiff, who was condemned in costs, and ordered to indemnify Bruns for his loss of time and sufferings, but of which Bruns generously did not avail himself. This is a trait strongly characteristic of benevolence. As a proof of his caution, when establishing his mill he took every care to comply with the law which specifies that no private mill shall be erected within a certain distance of the King's *Zwang* mills, and got his right secured by a patent, and a protocol from the prefecture. Both these deeds were forced from him by the contrivances of his enemies. Still persevering, Bruns petitioned the Royal Court of Hanover that an impartial tribunal might be appointed to investigate his case, which was granted, but the influence of his opponents prevailed, and sentence was given against him. Many other acts of oppression, emanating from the same quarter, were committed, which I will not trespass on your time by relating. Bruns having now tried all legal means that were open to him in his own country, resolved to go to England, and once more to lay his complaint before the King. On his road he met with another victim of oppression, who had not the means of paying his passage. With him Bruns humanely shared five louis-d'ors, which was all he possessed. On the accession of his present Majesty, Bruns walked to Brighton with another petition, which he handed into the royal carriage as the King was stepping in. On two other occasions he went on foot for the same purpose to Windsor and Richmond, and each time, with much tact and ingenuity, effected his purpose of placing his petitions in the King's own hands. I think these instances are sufficient to illustrate his possession of the faculties of firmness and benevolence, and must observe that, notwithstanding his repeated disappointments, his hopes are as strong as ever of ultimate success. The *benevolence*, *adhesiveness*, *philoprogenitiveness*, *secretiveness*, *conscientiousness*, &c., agree in his phrenological development with the accounts obtained of him. As relates to his conscientiousness I may observe that, although poor, he cannot be readily prevailed upon to accept a remuneration, unless he conceives that his services have been equivalent to the reward. I think

his *combativeness* will be found moderate. He states his aversion from being a party to quarrels and fights, but acknowledges to have been at all times hasty and passionate when roused, but that he soon forgave the offenders.

I have in my possession a short treatise on the phenomena of the winds and clouds as influencing our judgment of the weather, written by Bruns, and which evinces much acuteness of observation. A certificate from the clergyman of his village testifies to his being a good husband, father, and neighbour.

*** The editor will oblige the reporter by inserting the following corrections of his last report.

Page 861, paragraph 3, line 3, *for* it appeared to say one that if the Almighty, *read*, if it appeared to any one that the Almighty.—Line 9, *for* saying, *read* thinking.—Page 862, line 17, *for sentence beginning* So far, *substitute the following*:—So far from Hume having led the way for those who believe that the brain has compartments for various faculties, he led the way for the Berkleyans, who denied all proof that matter of any kind existed at all.—Col. 2, line 22, *for* the different, *read*, the originally different. Line 27, *for* within, *read* but within.—Line 57, *for* praised, *read* prized.

ROYAL INSTITUTION.

Friday, March 6th, 1834.

DR. FARADAY ON THE ELECTROLYTIC * POWERS OF THE VOLTAIC BATTERY.

THE theatre and libraries of the Institution were very fully attended this evening, the grand attraction being Dr. Faraday's exposition of his new views of the analytic properties of the galvanic battery.

The lecturer began with a few appropriate introductory remarks. Before the magnificent discovery of Volta, he said, the only agent resorted to in the production of chemical decompositions was the principle of affinity or elective attraction. A natural body consisting of certain constituents was analysed by bringing it in apposition with a body which had a greater affinity to one of its elements than existed between that element and its associates. The result was a separation of the old constituents, and a permanent combination of the separated elements with the attracting body. When the powers of the voltaic pile in producing decomposition were first demonstrated by Sir Humphrey Davy and others at the commencement of this century, the changes effected were all referred to an affinity subsisting between the elements separated and the poles of the battery. This principle was adopted, with only slight variations, by all the writers on the subject. The theory in question always appeared unsatisfactory to Dr. Faraday, but his great veneration for Davy made him doubt his own judgment, and had deterred him from calling in question the validity of any of his doctrines. Much reflection, however, and many experiments, had confirmed his original doubts, and his duty as a votary of philosophical truth, surmounted even his regard for the memory of his illustrious friend, and induced him to broach his ideas to the Royal Society. That learned body had determined on the publication of his paper in the course of the spring, and had the manuscript in their possession. He was desirous, in the interim, of laying before the members of the Royal Institution, in whose laboratory the experiments were made, the series of facts upon which were based the views he had adopted. The lecturer now illustrated the nature of chemical affinity by a series of experiments which are familiar to our chemical readers, showing that new permanent combinations were always formed by the disengaged constituents. A few decompositions through the agency of a powerful voltaic battery were exhibited. In one instance water was the subject of operation. Its elements, oxygen and hydrogen, were of course separated. There are *two* circumstances which attracted Dr. Faraday's attention in the decompositions produced by the electric agency. *First*, no new combination was formed, and the emancipated bodies remained perfectly free. *Secondly*, the decomposition was produced at a considerable distance from the poles. These facts are broadly inconsistent with the conditions of ordinary decompositions through the agency of affinity, *where new bodies are invariably formed, and the reagents act at insensible distances.* To suppose a power of attraction inherent in the electric poles, generated many difficulties in the explanation of the facts presented to the analyst's notice. The following experiment was in point. A piece of paper tinged with litmus, and another tinged with turmeric, were wetted in a solution of sulphate of soda; a piece of white paper was interposed between these two. This arrangement was placed between the poles of the battery, and decomposition of the sulphate of soda was the consequence, the litmus and turmeric papers being both reddened, the one by the acid and the other by the alkali. The old theory supposes that the alkali must have travelled through the diaphragm of papers from the positive towards the negative pole, and the acid from the negative to the positive pole,

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* Ελεκτρον et λυω solvo.

which is difficult to imagine possible. Dr. Faraday's theory, however, removes these difficulties. According to him the poles exercise no attraction as regards the elements; their power is purely analytic, and reaches not to the formation of new bodies. By doing away with the conditions on which the chemical combination of neutral bodies depends, the constituents are set free, and demonstrate their original properties at the respective poles of the electro-dynamic apparatus. That the separated elements did not enter into new unions was evident to every experimentalist, but to prove that there was no *immediate* attraction at the poles, the lecturer invented the following ingenious experiment.

A common glass sugar-basin was more than half filled with a solution of sulphate of magnesia; a septum of *mica* was then introduced into the vessel and immersed a little below the surface of the liquor; on one side of this division, a quantity of water was poured in with great care, and on the other side an additional quantity of the solution of the sulphate. This proceeding required great delicacy, so that there should be a distinct plane of separation between the water and the subjacent solution. This new arrangement was placed between the galvanic poles; the one being placed on the surface of the supernatant water, and the other immersed in the subjacent liquor. A decomposition took place, the magnesia rising in the form of an opaque cloud, upwards to the plane of demarcation between the solution and the water, but did not ascend through the water, and remained distant from the pole about two inches, showing that the decomposition took place in consequence of the salt liquor being placed in the current of the electric fluid, and not in any manner as a result of the contact of the electrolytic pole with the subject of experiment. Dr. Faraday also explained a fact connected with the action of the galvanic battery. When, after the decomposition of water, the platinum plates at the extremities of the wires were left in the solution some time (their connexion with the battery being destroyed) a re-combination of the separated elements took place; this fact has by some continental philosophers been referred to a magnetic property imparted to the platinum by the voltaic apparatus. Professor Faraday, however, denies the existence of any such property, and ascribes the effect merely to the perfect cleanliness of the platinum The particles of all elastic bodies exercise a repulsive action towards each other, by which they are retained apart at a certain distance. On this their gaseous form depends. The platinum being a dense body, exercises a certain attraction on the gaseous atoms, and causes them to approximate towards its surface. By bringing them into near contact with each other, and thus destroying the distance upon which their elastic form depends, it produces their re-combination into the liquid form. He proved this by employing plates cleaned by immersion into sulphuric acid, as well as by adaptation to the ends of the galvanic wires. The result in both arrangements was the same, the re-union of the oxygen and hydrogen into water.

THE LANCET.

London, Saturday, March, 15th, 1834.

Whilst the Government is evincing every disposition to improve our medical code, it is worthy of remark that a *portion* of the profession is using every possible exertion to perpetuate the odious system which has been so earnestly denounced by the great majority of that body. Artifices out of number are at this moment brought into requisition to counteract the intentions of ministers, by the medical corporations of Dublin. Honest men demand their rights openly, and discuss their grievances in the presence of the public. The sordid and selfish alone endeavour to attain their ends in darkness and in secrecy. The Castle of Dublin was just the place for movements of a sombre character, having long since earned an historical celebrity for the facility with which its councils might be affected by the representations of the informer and the parasite. But though the presiding spirits of that place may not be so readily moved to evil in modern times as were some of their predecessors, we know that the avenues to the old den of the vice-regal Dionysius have been freely traversed, and that the "leprous distilment" of corporate corruption has been energetically poured into the ear of power. To medical

reformers, who have reason to calculate on the ultimate success of their endeavours, it is gratifying to know that these corporations have sunk so deeply in the mire of degradation that they are compelled to have recourse to such means to support their falling cause. When, too, we behold such a man as old Mr. Colles turn courtier to serve political purposes, we cannot but consider that the flourishing days of "ticket-and-apprentice fees" are about to close for ever.

Although we possess full knowledge of the treacherous attack on the measures which are in progress for securing the independence of the medical profession in Ireland, we shall content ourselves for the present with exposing its injustice, and not make painful references to the character of individuals. It is true that the turpitude of these traitors to the cause of science and of humanity deserves to be fixed personally upon its authors, but a firm reliance on the just intentions of ministers relieves us from engaging in so unpleasant a duty.

Though the exposure of his misfortunes is one of the last alternatives to which a man of education and sensibility will submit, yet so extreme is the distress of medical men in Dublin, that the veil which delicacy of feeling would draw over their condition has been long since rent asunder, and their wants have been made the theme of vulgar and ribald commentary. To "manœuvre a dinner" or to "fly a kite," is now sarcastically represented as forming almost the only occupation of the Dublin practitioners. Report represents it as certain, that not one in every ten of them is supported by the practice of that science which, under these melancholy circumstances, has become at once "their glory and their shame." Some are supported by their relatives,—others by fragments of properties, the bulk of which has long departed. Some are dragging out a miserable existence on the incomes of matrimonial settlements,—others, and they are not a few, we know to be in a state approaching that of actual starvation. This is not an exaggerated picture.

How has this wretched state of things been produced? Is there no practice for physicians and surgeons in Dublin, or are the collegiate practitioners of that city less worthy of confidence than the medical men of other places? We unhesitatingly furnish an answer in the negative. There is every need for the skill and services of the regular practitioners of that city, and nowhere, perhaps, in Great Britain are the professors of medicine better-informed men. The evil is mainly attributable to the selfish policy of the few who constitute the medical corporations of Dublin, and who, by infusing into the minds of their pupils and apprentices false ideas of their proper pursuits, and by the enactment of by-laws prohibiting them, under pain of degradation, either to receive moderate fees or to dispense their own medicines, have thrown the entire practice of the city into the hands of the licentiates of the Apothecaries Company of that capital. The legitimate rewards of study, of the acquirement of knowledge, and of a high degree of intelligence, have thus been forced into the coffers of the abettors of every species of empiricism. The consequences of the ignorance of such a body of men in the treatment of disease are formidable indeed. It is, indeed, too true, that of every essential qualification for the station they now occupy in society in Dublin they are totally deficient. The Company have, to be sure, "got up" a sham prospectus of education, and founded sham "Professorships," (with the merits of which the Parliamentary Committee will soon be made acquainted,) in order to acquire an undeserved character for those who belong to their institution. But the day has arrived in which their

impositions will be unmasked, and speedily will appearances be stripped away, that realities may be exposed. Up to this moment, however, the humbug has proceeded most successfully, and from being the subordinates, the pharmacopolists have become actual possessors of the most lucrative part of the medical practice of Dublin. How Mr. RUTHVEN became so enamoured of this class of men, as lately to stand forth their champion in the House of Commons, we know not, but this we know, that he could not have inflicted a greater injury on his constituents than securing to the Dublin Society of Apothecaries the monopoly of medical power and practice throughout Ireland. Were the members of the corporation men of science and of prudence, who, taking advantage of the vanity of their imbecile managers, and making themselves more useful to society, would secure public favour in the fair field of competition, we should be the first to applaud their designs, and congratulate them on their success; but of every branch of medical science (unless, indeed, the embellishing of drug shops with the tinselled hieroglyphics of the materia medica be considered one) they are, for the most part, as nescient as they are of astronomy or navigation.

But their monopoly is shaken; and it will require very little increase of exertion on the part of their depressed opponents to level the entire structure with the ground Already the Government has consented to its demolition; let Parliament be assisted in its efforts by those who will profit by the overthrow. The members of the medical profession in Ireland see the appalling position in which they have been placed by the crafty Company. They have made their circumstances known to the Legislature, and now let them remember that the Parliamentary Committee is the important instrument through which ultimate good can alone be effected. Let them remember, that it is now a duty which they owe to themselves, the profession, and the public, to furnish that committee with facts by which it can test the rottenness of the materials with which the old fabrics of corruption have been built, and the soundness of those materials out of which the new structure should be erected. It is towards the accomplishment of this work that they should direct all their energies. It is useless, childish, nay, absurd, to continue to utter lamentations in Dublin, when a plain statement of facts at Westminster may be the means of effecting all that is desirable in the reconstruction of medical law. All the proceedings of the great engine of state will be useless in the absence of positive confirmations of those grievances which have been inflicted on the profession by the medical corporations and their agents. Let the Dublin practitioners feed that intellectual engine with *facts*, and rely with confidence on the force of the truths they may thus convey. Then, when the digest of the committee is before Parliament, must the opinion of the profession on the evidence from which the members of the committee have drawn *their* report, be made known to the Legislature.

In carrying on the struggle against the corruptionists, however, we ought invariably to recollect that the power which is wielded against the medical reformers is a *combined*, and not a *divided* force. The enemy adopts "UNION" for its motto, and that union is cemented by ingeniously-devised links of organization and arrangement. Now is it not a truth that the reformers stand in scattered patches over the field of strife, and that although the spirit of enterprise and honourable daring prompts them to ready action, the absence of *system*, of *discipline*, has hitherto interfered to a deplorable extent with a successful termination of their exertions?

What step, then, should be taken at this important crisis of the struggle? Why—obviously—in order to collect the greatest number of facts relative to medical abuses—in order to transmit evidence of those facts to the parliamentary inquirers in the most effectual manner, and without delay—a MEDICAL REFORM COMMITTEE, consisting of not less than three persons, should be instantly constituted in every principal city of the empire; and in no city is the appointment of such a body more imperiously demanded than in that of Dublin.

With a view to render the labours of such a committee of service in the cause, and in order, consequently, to prevent their exertions from being inaptly directed, we have taken the opportunity of publishing in this week's LANCET, the Parliamentary Circulars which have been forwarded, without exception, to the managers of all our hospitals, infirmaries, and dispensaries. The categories so ably propounded in those documents, will suggest from what channels facts should be collected by the local committees. Upon the documents themselves is stated into what general stream all the smaller currents should flow.

In placing those questions before the general body of the profession, we may be excused for hinting to private practitioners, that *statements of fact* are of equal importance, whether they emanate from *villages* or from *cities*, and that proof of the medical mismanagement of a rural workhouse, will be as necessary to complete the investigation now in progress, as indisputable testimony of the maladministration of the affairs of a metropolitan hospital. In short, if a practitioner have but one fact to communicate, let him forthwith transmit an account of it to the Parliamentary Committee. Having done that, he may rest content, because a sense of duty can demand nothing further from him. Conscious that he has thus discharged his own obligations to society and the profession, he will be entitled to insist, in a tone of authority, that his brother practitioners shall become, in like manner, contributors to an inquiry, in the successful termination of which, the happiness of the community, the cultivation of science, and the prosperity of the members of the medical profession, are alike involved.

The Geology of the South East of England. By GIDEON MANTELL, F.R.S., M.R.C.S., &c. London, Longman and Co., 1833. 8vo. Wood-cuts; pp. 415.

GEOLOGY has lately advanced with such rapid strides, that its character has altogether changed. Its cultivators no longer bewilder their minds with extravagant theories respecting the formation of the globe out of "chaos," or its passage through a series of hypothetical metamorphoses, but they now make careful examinations of those evidences of its former condition which are conspicuous on its surface, and look to the ancient remains of extinct animals which are imbedded in its various strata, with a degree of order and precision surpassingly curious to the uninitiated observer. These natural records are neither few nor ambiguous, and teach us, in terms too plain to be mistaken, that the whole of our present lands and continents were formerly covered by the ocean, received deposits of materials from the attrition and defallescence of tracts of countries now no longer existing, and formed receptacles for the remains of marine animals and plants, as well as for similar spoils from the lands washed down into the sea. These remnants, when inspected, afford evidence of the former existence of a state of animated nature very unlike what now prevails, and of a period, or rather a series of periods, antecedent to the first appearance of man—periods of uncertain duration, in which land and sea abounded in forms of animal and vegetable life which have successively disappeared, and, at each epoch, have been supplanted

by others approximating in character more and more to those which now fill the world.

These vestiges of ancient physical dynasties, preserved even more singularly than coins and medals, afford a rough chronology, by the help of which the successive depositions of strata may be marked into *eras* of a more or less definite character, and distinguished by some peculiarity which enables us to recognise the periods of each, deposited in whatever part of the world it may be found. Many of the strata which thus bear evidence of having been precipitated at the bottom of the sea, and in a horizontal state, are now found in a position highly inclined to the horizontal, and sometimes even vertical, and often show manifest proofs of violence in their bending and fracture, in the disruption of parts which were once contiguous, and in the existence of vast collections of broken fragments. Besides those rocks which carry this internal proof of submarine deposition, there are many which show no such proofs, but which, on the contrary, manifest a volcanic or other igneous origin. In every part of the globe, and among strata of all epochs, there occur evidences of such action, so abundant, and on so magnificent a scale, as to point out the volcano and the earthquake as agents which have been materially instrumental in the production of those changes.

In accounting for such alterations of level and violent dislocations as are apparent, geologists have no longer recourse, as we have remarked, to causes purely hypothetical, but they endeavour to restrict themselves "to a careful consideration of causes evidently in action at present, with a view to ascertain how far they, in the first instance, are capable of accounting for the facts observed, and thus legitimately bringing into view, as residual phenomena, those effects which cannot be so accounted for." After further research we may be able to admit, or to deny positively, the necessity for those tremendous catastrophes which many geologists regard as essential to a true explanation of the existing condition of the earth. We may learn to distinguish more accurately between the effects which require for their production the sudden application of convulsive efforts, and the not less extensive changes which may have been produced by forces equally or more powerful, but acting with more regularity, and in a manner apparently more congenial to an order so harmonious as that of nature.

This faint view of the end and scope of geological investigations will afford a clue to the contents of the admirable essay of Mr. MANTEL, of Brighton, towards a correct history of the physical geography, geological formation, and organic remains, of the ancient kingdom of Sussex. The following is the order he has adopted in the arrangement of his subject:—1. Physical Geography of Sussex. 2. Geological structure of the same county. 3. Diluvium. 4. Tertiary formations. 5. Chalk formation. 6. Organic remains of the upper and lower chalk. 7. Chalk-marl, and its organic remains. 8. The Wealden formation. 9. Organic remains of the Wealden and Tilgate forest. 10. Fossil remains of the Saurian reptiles of Tilgate forest. 11. Deductions.

The straitness of our limits prevents us from indulging in any quotations from this original and scientific work, which is distinguished by a correct arrangement of the subjects, an accuracy of description, an acuteness of deduction, a comprehensiveness of theory, a perspicuity of style, and an excellence of graphic illustration, which reflect infinite credit upon the zeal and industry of the author, who, though most extensively engaged in the practice of his profession as a surgeon, has devoted his leisure to such noble purposes as the researches commemorated in this book. The successful handling of such subjects requires an exact and extensive knowledge of chemistry, comparative and human anatomy, and botany, and a general acquaintance with all the natural sciences. This knowledge is possessed in a high degree by Mr. MANTEL, whose numerous discoveries in fossil botany and anatomy not only evince the solidity of his knowledge, but place in a strong light his industry, perseverance, and patience, in overcoming the difficulties, and evading the obstacles, which the pursuits of an arduous profes-

sion present. Mr. MANTEL affords an example worthy the imitation of all his professional brethren, and furnishes a signal proof that active occupation in a busy country town, is not inconsistent with a deep devotion to the most profound philosophical investigations which can occupy the time of man.

Questions which the Governors of

DISPENSARIES

are required to answer for the Information of the Committee appointed by the House of Commons to inquire into the state of Medical Practice and Education; and which the said Governors, having answered, are required to return, directed "To the Chairman of the Committee on Medical Education, House of Commons, London."

1. When was your dispensary first established?
2. How is it supported?
3. Are there in-patients as well as out-patients?
4. If so, what was the number of each in 1833? and what is the number of beds for in-patients?
5. State the number of medical, surgical, and midwifery cases in 1833?
6. What is the number of physicians, surgeons, apothecaries, nurses, and other officers attached to your dispensary?
7. What are the names of the physicians? Where did they graduate? When did they graduate? Of what medical or surgical colleges are they fellows, members, or licentiates? When were they elected officers of the dispensary?
8. What are the names of the surgeons? When did they graduate or obtain their diplomas? Of what medical or surgical colleges are they members, fellows, or licentiates? Are they members of any and of what company of apothecaries? Do they belong to the council or board of examiners, of any and of what college of surgeons? When were they elected officers of the dispensary?
9. Is the choice of your medical officers restricted to the graduates, fellows, members, or licentiates of any particular universities, colleges, companies, or corporations?
10. Would the holding of any particular religious belief operate to exclude a person from being one of your medical officers?
11. In whom rests the election of your medical and surgical officers? and what are the by-laws for regulating such elections?
12. What are the names of the house surgeons or apothecaries?
13. Do they actually reside at the dispensary?
14. How many times a week, and at what hours, are the other medical officers required to visit the dispensary?
15. In what manner and by whom are the medicines for the use of the dispensary supplied?
16. Is the person supplying the medicines a medical officer or governor of the dispensary?
17. What was the salary, and what were the emoluments, of each medical officer of the dispensary in 1833? and whence are the emoluments derived?
18. What was the rate of fees for a student's attendance on the medical and on the surgical practice of the dispensary in 1833? What was the amount of such fees, and the share paid to each medical officer in 1833?
19. Are any and what lectures given at the dispensary, and by whom? What is the rate of fees for attendance on those lectures? By whom are the lecturers appointed?
20. Are any of the lecturers also medical officers to the dispensary? and if so, what emoluments do they derive from those lectures?
21. By whom is the rate of fees for attending the medical practice of the dispensary, and for attending the lectures, regulated?
22. What was the number of pupils attending, 1st, the medical, 2nd, the surgical practice of the dispensary, in each of the years 1831, 1832, and 1833?
23. What was the number of pupils attending the lectures in the same years?
24. State, in detail, the income, the sources of income, and the charges upon income, the actual receipts and payments, and the balance in hand at the beginning and end of the year, for each of the years 1831, 1832, and 1833?

Questions which the Governors of

INFIRMARIES*

are required to answer.

1. When was your infirmary first established?
2. Does your infirmary depend for its support on endowment, on rates made for

* This circular has also been addressed to the Governors of HOSPITALS, with the substitution of the word "Hospital" throughout for "Infirmary."

its maintenance, or on voluntary contribution?

3. How many beds are there at your infirmary for in-patients?

4. How many in-patients were admitted into your infirmary in each of the years 1831, 1832, and 1833?

5. How many in-patients were there at your infirmary on the 1st of January of each of the years 1832, 1833, and 1834?

6. How many in-patients, admitted into your infirmary in 1833, were, 1. medical cases, (*a*) acute; (*b*) chronic; and 2. surgical cases, (*a*) wounds and accidents; (*b*) chronic?

7. How many of the in-patients in your infirmary on the 1st of January 1834 were, 1. medical cases, (*a*) acute; (*b*) chronic; and 2. surgical cases, (*a*) wounds and accidents; (*b*) chronic?

8. What number of capital operations was performed at your infirmary during each of the four last years.

9. Class the number of capital operations performed at your infirmary during the four last years, according to their nature, and state the number belonging to each class?

10. What was the number of cases of fractured bone for which in-patients were admitted during each of the four last years, and what was the number of severe accidents?

11. Does your infirmary admit of out-patients? How many out-patients were visited in 1833; and how many were under visitation on the 1st of January 1834?

12. How many of the out-patients visited in 1833 were medical, and how many were surgical cases?

13. How many of the out-patients under visitation on the 1st of January 1834 were medical, and how many were surgical cases?

14. Are the out-patients visited at their own homes?

15. Are the out-patients visited by the medical officers of your infirmary, or by the pupils of the medical officers, or by whom?

16. What is the number of the physicians, surgeons, apothecaries, nurses, and other officers, attached to your infirmary?

17. How many of these are required to be resident, and how many are visiting medical or surgical officers?

18. What are the duties belonging to each of the aforesaid offices?

19. Do the resident or house physicians, surgeons, or apothecaries, of your infirmary actually reside, or do they live in the neighbouring town or city?

20. What are the names of the physicians? Where did each graduate? What are the dates of their degrees? Of what medical or surgical colleges are they fellows, members, or licentiates? When were they elected to the infirmary? In what capacity were they immediately before their election?

21. What are the names of the surgeons? Where did they graduate, or obtain their diplomas? Of what medical or surgical colleges are they members, fellows, or licentiates? Are they members or licentiates of any and of what company of apothecaries? Do they belong to the council or board of Examiners of any, and of what college of surgeons? When were they elected to the infirmary? In what capacity were they immediately before their election?

22. Is the choice of physician, surgeon, or apothecary to your infirmary restricted to the graduates, members, fellows, or licentiates, of any particular universities, colleges, companies, or corporations?

23. Is the physician, surgeon or apothecary, of your infirmary required to be of any particular religious persuasion, or would the holding of any particular religious belief be a ground for exclusion?

24. In whom rests the election of the medical and surgical officers of your infirmary; and what are the by-laws for regulating such elections?

25. State the name of the house-physician, house-surgeon, and house-apothecary, and the ordinary place of residence of each?

26. How many visits a week are required of the visiting physicians and visiting surgeons respectively; and what and how many hours are given to such visits?

27. In what manner and by whom are medicines supplied for the use of the hospital? What was the cost of medicines supplied to your infirmary in each of the years 1831, 1832, and 1833?

28. Is the person supplying medicines a medical officer or a governor o. your infirmary?

29. What is the salary, and what are the emoluments of each officer of the infirmary, and whence are the emoluments derived?

30. What are the rates of fees paid by students for attendance on the medical or surgical practice of your infirmary?

31. To whom are those fees paid in the first instance?

32. Between whom are those fees divided, and in what proportions?

33. What was the amount of fees taken for attendance on the medical and surgical practice of the infirmary in each of the years 1831, 1832, and 1833?

34. What amount, derived from such fees, was paid to each officer in the infir-

mary, entitled to share the same, in each of the said years?

35. By whom is the rate of such fees regulated?

36. What was the number of pupils attending, first the medical, second the surgical, practice of the infirmary, in each of the years 1831, 1832, and 1833?

37. What was the number of apprentices articled to each medical officer of the infirmary in each of the said years?

38. Are apprentices to the medical officers of the infirmary required to pay the same fees for attendance on the medical practice of the infirmary that other students are required to pay?

39. Are members of the profession required to pay the same fees as students for attending the medical and surgical practice of the infirmary?

40. What are the regulations for admitting students or members of the profession to the medical and surgical practice of the infirmary?

41. By whom are such regulations made and approved?

42. By what universities, colleges, or companies, empowered to grant degrees, diplomas or licenses to practise, is attendance on the practice of your infirmary recognised, as a qualification to be examined for such a degree, diploma, or license?

43. When was your infirmary first so recognised?

44. What length of attendance on the practice of your infirmary is required by such universities, colleges, or companies, as qualifying a student to be examined for a degree, diploma, or license to practise?

45. Have the fees for attendance on the practice of your infirmary undergone any variation, since such recognition of your infirmary, by any university, college, or company? If there has been any variation, state it?

46. What lectures are given at your infirmary?

47. What are the names of the lecturers?

48. By whom are they appointed?

49. What is the rate of fees for admission to every such course of lectures?

50. What is the time that each course lasts?

51. What is the number of pupils that attended every such course during 1831, 1832, and 1833?

52. State the emoluments that each lecturer derived from such lectures in 1833?

53. State the regulations of the hospital for admission to such lectures?

54. By what universities, colleges, or companies, empowered to grant degrees, diplomas, or licenses to practise, are these lectures recognised as a qualification to be examined for such degree, diploma, or license?

55. When did that recognition first take place?

56. Were the fees of admission to such lectures varied in consequence of such recognition?

57. Are the medical officers of the infirmary permitted to be governors thereof? Are any of them governors?

58. What was the mortality among the in-patients of the infirmary during each of the years 1831, 1832, and 1833? State the same for the out-patients?

59. Is anatomical examination of those who die at the infirmary allowed by the governors to be made?

60. State, in detail, the income, the sources of income, and the charges upon income, the actual receipts and payments, and the balance in hand at the beginning and end of the year, for each of the years 1831, 1832, and 1833?

61. By whom and in what manner are the governors, managers, or committee of your hospital elected; are they elected for life, or for a limited period?

62. Is there any established dietary for in-patients?

MEDICAL REFORM.

SUNDERLAND.

A MEETING of the medical profession of Sunderland and the Wearmouths was held at the Infirmary on Tuesday, the 18th instant, to take into consideration the subject of medical reform, Dr. W. REID CLANNY in the chair, when resolutions were passed *unanimously*, on which the following petition was founded:—

"To the Honourable the Commons of the United Kingdom of Great Britain and Ireland, in Parliament assembled, the humble petition of the undersigned members of the medical profession resident in Sunderland and the Wearmouths,

"Showeth, That your petitioners observe with pleasure that a Select Committee of your Honourable House has been appointed to inquire into and consider of the laws, regulations, and usages, regarding the education and practice of the various branches of the medical profession in the United Kingdom.

"That although they have the fullest reliance on the wisdom and diligence of such Committee, they yet deem it expedient to suggest, that the charters, laws, and by-laws, of the existing medical cor-

porations throughout the United Kingdom should be comprised among its subjects of inquiry.

"That your petitioners hope and believe, that from such investigation your Honourable House will in its wisdom see it advisable to devise such ameliorations of the medical institutions of the country, as may tend to the encouragement of well-educated practitioners of all classes, and to the total suppression of imposition and empiricism.

"And your petitioners will ever pray, &c."

It was also resolved, "That the petition be presented to both Houses of Parliament, and that Mr. Alderman Thomson be requested to present the petition to the House of Commons, and Sir William Chaytor and the members of the northern division of the county of Durham be requested to support the prayer thereof; and that the Earl of Durham be entreated to present the petition to the House of Lords, and the Duke of Cleveland and the Marquis of Londonderry be requested to support the prayer of the same."

DUMFRIES.

A MEETING of medical gentlemen was held in the Council Chambers at Dumfries, on Friday, the 21st of February, to take into consideration the existing state of the medical profession, with a view of petitioning Parliament to remove the abuses which have hitherto existed. Dr. SYMONS in the chair.

In moving the first resoiutlon, Dr. Thorburn stated that the requisitionists were of opinion that it would be the wisest course to confine themselves to merely pointing out the most prominent and flagrant grievances, leaving it to the Legislature to propose the proper corrective measures. On these views the resolutions were drawn up, and unanimously carried. They contained the following opinions:—

1. "That the existing system of medical polity of the United Kingdom is not only totally inadequate to the reasonable wants of the profession and the public, but in an eminent degree prejudicial to both.

2. "That a prominent grievance is, the possession by numerous universities and corporate bodies, of antiquated and injudicious privileges, empowering them to regulate medical education, and to confer licenses and honours.

3. "That these bodies possess no power to protect their licentiates from the encroachments of unlicensed pretenders.

4. "That the power possessed by the London Apothecaries Company of compelling licentiates of other chartered bodies to undergo a menial servitude of five years, though previously acknowledged to possess a competent knowledge of pharmacy; and of insisting upon their submission to the degradation of being examined by a mere trading company, before they can act as general practitioners in England and Wales, is an intolerable grievance.

5. "That nothing can be more absurd and unjust than the privileges possessed by the London College of Physicians.

6. "That the present mode of granting licenses, and the whole system of medical education, urgently demand revision, and that an individual pronounced qualified by any ONE LEGALLY-CONSTITUTED BODY should be entitled to enter on the duties of his profession in any part of the British empire without being subjected to farther examination or impediment.

7. "That we view with satisfaction and gratitude the recent appointment of a Parliamentary Committee of Inquiry into the state of the profession, and confidently anticipate that the result of that inquiry, if conducted with due patience and on a comprehensive scale, *so as to guard against the ex-parte evidence of interested bodies or individuals*, will be such as to lead the Legislature to relieve the profession from its present anomalous and degraded condition, by the enactment of a just and enlightened measure.

8. "That a petition, embodying the subject of the foregoing resolutions, be drawn and presented to Parliament without delay, by Mr. Hume."

The thanks of the meeting were then unanimously tendered to Dr. Symons for his conduct in the chair.

WESTMINSTER MEDICAL SOCIETY

Saturday, March 8, 1834.

INFLAMMATION OF THE LUNGS.

MR. H. J. JOHNSON this evening related the case of a man who had been under his care for inflammation, under the following circumstances, the case illustrating in a striking manner the utility of percussion and auscultation. The man was a wheelwright, about 48 years of age. He had been subject to bronchitis for the last few winters, and in October 1833 had an attack of acute rheumatism, which did not appear to implicate the heart. In December, he again became affected with cough, and at the end of the month he began to suffer from pain in the left side.

On the 2nd or 3rd of January, in the morning, after having rolled a wheel from Marylebone to Westminster, he was seen by Mr. Johnson. He then suffered from severe cough, attended with some pain in the left side of the chest, on coughing or on deep inspiration; there was also symptomatic fever. The left side of the chest was universally dull on percussion, excepting the part immediately below the clavicle. The respiratory murmur was absent, or nearly so, in the lower two-thirds of the lung. Below the clavicle the respiration was more distinct, but rather bronchial; indistinct œgophony existed below. The action of the heart was more extensive than natural, but unaccompanied by much impulse or any *bruit*. Mr. Johnson concluded that the greater portion of the lung was consolidated by inflammation, and that some fluid existed in the pleura. He ordered for the patient, who had previously been bled, calomel (in order to affect the mouth), with digitalis and opium, purgatives, and the repeated application of counter-irritants to the surface of the chest. When slight salivation was obtained, the purgatives only were continued, and as soon as these had begun to diminish in their influence, diuretics (the acetate and nitrate of potass) were substituted. Under this treatment the patient improved to such a degree, that he insisted on returning to his laborious occupation, which he was to do on the succeeding Monday. The present state of the patient (said Mr. J.) is as follows:—He has some, but not much, cough; no pain or dyspnœa; no symptomatic fever whatever. He has gained flesh and strength, and feels fully able to resume his labour. Yet percussion shows that the left side of the chest is still generally dull, that the respiration is almost undistinguishable, except at the upper part, where it is slightly bronchial, and that œgophony (not however decided) seems to exist below. It is evident that little or no respiration is effected by the lung; that probably its structure is consolidated, and that some effusion existed in the pleural cavity.

Mr. Johnson drew attention to the fact that the general symptoms were scarcely calculated to attract attention, certainly not to excite alarm—that the stethoscope pointed out the dangerous nature of the case, and that, under peculiar circumstances, say in the case of a life insurance, information of this nature might be of the highest importance. In order that the society might observe whether his representations were correct, Mr. J. begged permission to bring the patient himself before them.

The patient was now introduced, and examined by several of the members. Mr. Costello percussed the chest with the fingers. The right side of the thorax was sonorous throughout its entire extent; the left side was dull in all its lower part; it was sonorous, though in a feeble degree, at its upper and back part; the ear, applied immediately to the chest, detected œgophony in a portion of the lower part. The stethoscope furnished similar evidence. When the patient had withdrawn,

Dr. James Somerville complimented Mr. Johnson on his diagnosis and treatment of the case, and remarked ironically on the evidence which the proceedings of the evening afforded of the reforming character of the times. Here was a *mere surgeon* possessing the boldness to treat and speak of an *internal* disease. A few years ago, such presumption would have called down the wrath of the whole College of Physicians on the head of the daring innovator.

Mr. Costello thought that Mr. Johnson deserved great credit for introducing a case in many respects so valuable to their notice. In these times, in the instance of that important improvement of our means of investigation, the stethoscope, we saw renewed the same struggle between ignorance and science which existed in the days of the immortal Harvey. The immoveables of Harvey's time would not be brought to believe in the circulation of the blood; those of the present period could not think the stethoscope was good for anything. At a dinner-table conversation, very lately, he heard a physician contend, with almost indecent acrimony, that that instrument was of no use whatever to the patient, and that it was merely an implement of modern quackery. Mr. Costello proceeded to observe, that the progress of knowledge was mainly assisted by a good nomenclature, and there was one word in the description of this case for which Mr. Johnson deserved praise; he had substituted the word "consolidation," which simply and properly described one of the states of the lungs resulting from severe pneumonia, for "hepatization." Mr. Costello understood that the prognosis of this case was not considered on the whole a favourable one, and as it might be useful to sustain a better hope, he would state a similar case; he then gave details of an illness which he had himself suffered from a dissecting wound in 1827, wherein he had had *consolidation* of the lower part of the left lung, which persisted for a long time after his convalescence.

Dr. Johnson had seen this case before it fell under the care of his son, and men-

tioned other similar cases; he looked on the prognosis with no very sanguine hope, because, in addition to the consolidation, there was effusion in the pleura as well as tumultuous action of the heart itself.

Mr. HUNT inquired how long the lung might remain consolidated, and what hope was entertained of its being rendered permeable to the air again, or if there was any limit of time when this hope should be abandoned.

Dr. JOHNSON believed that the lymph effused in the consolidation might be reabsorbed after a long lapse of time.

Mr. COSTELLO in the course of some further remarks said, he had observed a marginal inflammation of the lungs in measles, which required nice examination by the stethoscope to detect it. He had known such marginal inflammation produce fatal results in children.

The discussion then extended to the subject of purulent infiltrations, particularly after amputations, tubercles, pneumothorax, &c., for which we have not space.

MR. COLEMAN AND MR. B. CLARK.

To the Editor of THE LANCET.

SIR,—Depending on your known inclination to support truth and justice, I beg leave to lay before your readers a most flagrant instance of misrepresentation on the part of a lecturer to his pupils, which has been persisted in shamelessly for a long series of years, and I think you will admit is deserving of some exposure. Mr. Coleman, in the course of his lectures at the Royal Veterinary College, is regularly in the habit of asserting that the natural foot of the horse on its ground surface is of a circular form, and, moreover, claims the merit of having *discovered* the above most notable circumstance. In proof whereof he produces his unfortunate work, published in 1802, wherein he speaks of "the circular form of the foot as it comes from the hand of the maker," and exhibits a stiff unnatural plate of what he there considered a perfect foot, and as round it certainly is as compasses could represent it. He then goes on to observe, that Mr. Bracy Clark has also stated the foot to be circular, and that he has likewise claimed it as a discovery, in his work on the Foot, published in 1809. "But you see, Gentlemen," the Professor continues (showing the plates), "that I had described it seven years before Mr. Bracy Clark, and therefore I think you will admit in this instance that I, and not Mr. Clark, am entitled to all the merit of the discovery." The Professor dwells for a considerable time on this circumstance, and concludes by leaving an impression on the minds of the young pupils, that Mr. Clark had endeavoured to deprive him of the credit of originality in a matter of grave importance, and thus, without any more direct expressions, an unfavourable opinion is created in respect of Mr. Clark's integrity and writings. Now, Sir, it will scarcely be believed (after admitting that Professor Coleman *did* commit the blunder of describing the foot as circular), that the whole of his statement is totally erroneous, both as to the plagiarism and as to the fact. In the first place, as to fact, *the natural foot is not circular*; secondly, Mr. Clark has never described it as such, and so far from entering into any competition with the Professor's circular foot above alluded to, has taken the greatest pains to point out its important deviations from that figure, and to develop the physiological causes and reasons of its variations from that form, and the practical advantages resulting therefrom to the animal. I beg to refer to the splendid engraving of a really natural foot, forming the frontispiece to his work, where the straightness of the inside quarter, in order to obviate any chance of cutting the opposite leg, is palpably shown and clearly accounted for in the text; also the remarkable bulge of the outer quarter, usefully widening the horse's bearing surface on the ground, and various other smaller differences equally unknown and unappreciated by the makers of the Professor's perfect circular, whoever they might be. In this work will be found several interesting pages devoted to the explanation of these external circumstances; and to say that the foot is there described as circular, and the remark claimed as a discovery, is something beyond misrepresentation. In general terms, it may be remarked, that the horse's foot is not round, nor is it a square; but animated nature is not to be strictly confined by geometrical rules, and Mr. Clark has not committed any such absurd plagiarism as would be inferred by the language of the Professor. It is difficult to conceive how such a contemptible misstatement could have been annually persevered in for a course of years, when a very superficial glance at Mr. Clark's works would have undeceived the mind of every hearer; but, Sir, his doctrines on the subject are known to be so much at variance with the theoretical opinions of Mr. Coleman, that although not perhaps formally interdicted at the College, it would be highly imprudent in any pupil to quote them, or publicly approve their tenets. By such conduct he

would hazard rejection, or at all events be subjected to the sneers and jibes of his more subservient comrades, who all know that the straightest course to success lies in a ready acquiescence with Mr. Coleman's absurdities. These lectures have been like speeches made at one of the old select-vestries, wherein anything might be stated without a chance of contradiction. Thus the same plausible round tale is repeated to every fresh class of diploma-seekers, and no voice is heard in reproof or denial, though the few who have silently studied for themselves must have at once been convinced of its fallacy. I mention this not as a solitary instance, but as a specimen of the means resorted to at the College to undervalue Mr. Clark's works, and deter the pupils from their perusal.

"EDUCATION" AT THE VETERINARY COLLEGE.

I will take this opportunity of adverting to another subject. The *avowed* purpose of the tyro at the Veterinary College, who wrote a letter in your Journal of Feb. 6, was to contradict my statement that the expenses imposed on a pupil at that institution amounted to nearly double what they professed to be; instead of which he directly confirms and corroborates a part of them, and does not attempt to disprove the remainder. Professor Coleman's *initiatory fee* of twenty guineas is admitted, and the payment constitutes a perpetual pupil; while Mr. Sewel's charge for perpetuity is five guineas, though for a single course only three. The "Veterinary Student" omits all notice of separate charges made by the Pharmaceutist (by courtesy), the Demonstrator, and the Grinder, but he does not say that he has not himself paid them, and I will defy him to point out any other means that are available to pupils at the College, or to show that any regular instruction is given in materia medica, anatomy, &c., unless the above gentlemen are distinctly remunerated. He also very erroneously presumes that "the examination fee of three guineas has always been paid in addition to the twenty guineas;" and goes on to observe that *thereby* a course of the first medical lectures in London are "thrown open" to the veterinary student. This may look very fair, but I can assure the uncognoscent writer that those eminent and high-minded medical gentlemen who first supported the Veterinary College, did so on public and honourable grounds, and for the advancement of science, and not only threw open their lecture-rooms, but in the absence of qualified veterinarians they attended and examined the veterinary student without fee or reward of any kind, to which some now living can bear witness. Such was the conduct of Drs. Baillie and Fordyce and the illustrious John Hunter, and not until about the time of Mr. Coleman's accession to the Professorship did the Examiners accept any money in return for their services. There can be no doubt that at this time of day a most efficient examining Committee of Veterinary Surgeons could be found to attend, free of expense, but then the present medical gentlemen (putting the fee out of the question) answer the Professor's purpose much better than practical men, whose opinions would not always coincide with his own. With respect to these "medical lectures" on which so much stress is always placed, and which are held out as an important inducement to the young pupil and his friends, it is well known that they are very little attended to and are of no real advantage.

Your correspondent goes on to say that a "young man may with ease qualify himself to pass in a year," but he seems to think not in nine or ten months. This admission, Mr. Editor, is important, and demonstrates that your strictures, which led to the removal of the four or five months' system of pupilage, were sufficiently just and correct, although at that time there were "Students" ready to curry favour by writing in defence of it. It also would appear to be the opinion of this young gentleman that many of his fellow-pupils lose much time in "*making preparations*" (I trust his hours are well spent), "instead of properly dissecting and studying, to meet Sir C. Bell, when he *takes* them on the fifth pair of nerves." Now, Mr. Editor, with great respect for the learned Knight and for his valuable illustrations of the nervous system, I think you will agree that making preparations is infinitely a better employment for a veterinary pupil than studying the minute ramifications of every pair of nerves, which he never in practice will be called upon to remember. The truth is, Sir, now that students are obliged to attend for twelve months, that these useless minutiæ respecting the nerves are put forward to occupy a very large share of time, and hide the real insufficiency of their course of education. It may seem invidious to complain of the undue importance which is here attached to Neurology; nor would it be just, if essential subjects were first attended to; but when there is no *course of operations*, not a word on the diseases and *treatment* of cattle, no *instructions in shoeing*, and no acknowledged lectures on materia medica, such an overweening

demand for neuralgic information is akin to inflicting the task of studying a dead language on the fourth class of a village school. In conclusion, Mr. Editor, let me observe, that notwithstanding the satisfaction which your correspondent evinces at the various extra charges which he must have been subjected to, I apprehend the majority of his companions are of opinion that twenty guineas is an ample fee for all they are taught at the College, and that Mr. Coleman ought, out of this sum, to provide and pay the teachers of the different departments, as was clearly intended at its foundation. I am, Sir, your obedient servant,

CHARLES CLARK.

Veterinary Infirmary, Stamford Street, March, 1834.

MIDDLESEX HOSPITAL.

TREATMENT OF VARICOSE VEINS.

A DIFFERENCE in the mode of treating varicose veins having existed for some time at this hospital between Sir CHARLES BELL and Mr. MAYO, the subject has given origin to much conversation among the students, who are often at a loss which mode they should adopt in future practice. They have often seen a patient rapidly recover under a plan of treatment which, in a succeeding case, required weeks, perhaps months, to effect a cure, although the constitutional differences and the nature of the complaint have not been very dissimilar. Under one surgeon perhaps three cases on his list will be cured evidently to his satisfaction, while it will sometimes happen immediately afterwards that he is unsuccessful in a fourth case, treated under circumstances not unlike the preceding three.

We shall give some cases treated according to each mode:—

Cases treated by Mr. Mayo.

CASE 1.—Caroline Hawkins, ætat. 44. Had been a servant, but was latterly occupied in washing and making up linen, which obliged her to remain in a standing position for many hours during the day. She mentioned, that in August last she was severely attacked with cold, under which she laboured for some time, and at length derived relief from, as she supposes, a copious perspiration. While recovering from the attack, she observed her right leg to be swollen, and four days after, she perceived an enlargement of the veins in the fore and upper part of the limb. According to her statement, it consisted of a simple enlargement, with a sense of difficulty in using the leg. This continued for a fortnight, the veins gradually increasing in size, when she found that at about the middle of the limb, just at the termination of the varicose vein, the skin had assumed a brownish hue, and was tender. Shortly afterwards, a minute abscess formed, which in four days suppurated, and finally became a large ulcer. Simple dressing was applied to it, but at length it became so painful, that on the 28th September she came to the Hospital, and was seen by Mr. Mayo. The ulcer then presented a very angry appearance. It was of nearly the size of a halfcrown piece, having an inflammatory blush towards its centre; near the edge the skin was white, and the cuticle was destroyed for a short distance, leaving the rete mucosum visible. The vein ran nearly through its centre, its larger half being internal. It appeared more swollen in the evening than at other periods. Mr. Mayo remarked, that the case presented a favourable opportunity for trying his mode of treatment, namely, the formation of an ulcer by an eschar, with the design of exciting adhesive inflammation about the veins, and thus cutting off the circulation from the sore, without which it would be difficult to effect a cure. The previous good state of her general health, and her spare habits, would, he said, prevent the inflammation from becoming diffused along the course of the vessels,—the only evil to be guarded against in such cases. For the cough he ordered the following expectorating mixture:—℞ *Mist. Camph.* 8 ounces; *Tinct. Opii*, half a dram; a teaspoonful to be taken every six hours. *Compound colocynth pill* 10 grains at bed-time. He then ordered his "paste," which consists of two parts of *soap*, and one of *potassæ fusa*, to be applied at about an inch above the sore.

30. The application of the caustic produced but a slight eschar, and it was therefore used again, the woman, however, complaining of the pain caused by it the first time. The cough being still urgent, the expectorating mixture was continued, and the pill at bed-time.

Oct. 3. A large ulcer was the result, the appearance indicating that the design of exciting adhesive inflammation could be accomplished. There was copious hemorrhage, which was stopped by a compress. The old ulcer looked more healthy; it had lost its inflammatory blush, and was less painful. Continue the expectorating mixture, and the compound colocynth pill, five grains, at bed-time.

5. The new sore presented an angry appearance, but the hemorrhage had

ceased. Its soreness prevented her sleeping, and whenever during the night the cough became urgent, she imagined that a needle was passed through the centre of the new ulcer. She appeared very nervous. The former sore looked extremely well, and there was every appearance of its cure being shortly effected. Continue the expectorating mixture. Simple ointment to both sores.—℞ *Opium*, 1½ gr.; *Colocynth*, 2 grs.; *Soap*, 1 gr.; to be made into a pill to be taken at bed-time.

7. She slept well during the last two nights, and her appearance was considerably better. The inflammatory blush of the new ulcer is fast subsiding, and there appears every prospect of adhesion in a few days. The old sore is healing quickly under the use of simple ointment. On the whole she is getting on very well. The cough is less urgent. Let the cough mixture be used every night at bed-time only. The other medicines to be discontinued.

9. Appears remarkably well. Adhesion has taken place in the vein, and the circulation has adopted another course. The simple dressings were now used, under which she recovered so well as to be enabled to walk about in a week, and in a fortnight she left the hospital quite well.

Case 2.—Hannah Walker, ætat. 56, was admitted into Peppy's Ward, Sept. 20th. She has laboured under an affection of the lungs for the last three years, which reduced her considerably. Her person was extremely emaciated and miserable. Her cough, which is always very severe, is more violent in the autumn than at other periods. She says that she has laboured under chronic rheumatism for the last five years. About two months since, being exposed to the rain for four hours, the pulmonic affection was so much increased, that she was confined to her bed for six weeks. The use of sudorifics and gentle aperients relieved her a little, when in the seventh week she perceived an enlargement of the veins in her right leg. This in a few days increased so considerably as to cause her ultimately to apply at this hospital. When seen, the swollen vein had a black tinge, which in a few days changed to yellow; its size increased, particularly towards the lower part. Shortly afterwards, suppuration having taken place, a small orifice was made with a lancet, which gave exit to a quantity of matter. This was the commencement of a sore, the cure of which became very difficult. During the latter stage of her distemper, the stomach rejected food, and she fancied that it was only when she felt the absolute necessity of viands, that it would retain them. For the cough she was ordered the following:—℞ *Camphorated Mixture* 10 ozs.; *Syrup of Poppies* 2 ozs; *Tincture of Opium* 30 drops; *Tartarized Antimony* 1 gr. Take a teaspoonful every four hours, and for the stomach the following:—℞ *Infusion of Gentian* 6 ounces; *Tincture of Columba* 3 drams; *Tincture of Valerian* 2 drams. A tablespoonful every evening. To remove constipation, let her have two *Compound Colocynth* pills at bed-time. Let the sore be poulticed.

Sept. 24th. This mode of treating the general system was preferred for the present, as until that was amended, Mr. Mayo could not think of applying local irritants, particularly as the nervous system seemed greatly deranged, as was evident from her starting at the slightest noise and her phantasmatic dreams. Continue the medicines except the pills.

Oct. 6th. Better in all respects, though the nervous irritability was only slightly diminished. The sore presented an inflammatory appearance. Very low and irritable while it was dressing. On removing the poultice, a quantity of dark blood also came away. It was now of the size of half-a-crown; its edges were yellow, and the painful itching about its surface was very troublesome.

It was now evident that some other treatment should be adopted. It was, therefore, thought advisable to commence changing the course of the circulation, for which purpose a portion of Mr. Mayo's paste of about the size of a large pea was placed an inch and a half above the sore, and retained there with adhesive plaster. She was then ordered the following draught:—℞ *Camphorated Mixture* 3 ounces; *Tincture of Opium* 20 drops. A teaspoonful to be taken every four hours.

8. The heat of the skin caused the potassa fusa to liquify and run towards the back part of the leg, the irritation from which caused excessive pain; and on examining the parts next day an eschar was visible, which surrounded the leg, and caused a larger slough at the sides than it did on the vein where it was intended to act. The nervous sensibility was by this accident considerably increased—so much as to forbid the further application of the caustic for a few days. Her proximity to the fire, it seemed, increased the liquifying qualities of the paste, and she was therefore placed in a corner of the ward for three days, when a second application was tried, liquefaction restrained, and the action on the part made more serviceable, though not to the extent expected, as it only destroyed the cutis, leaving all beneath unaffected. A third application

was, consequently, made next day,—against the inclination of the patient, who strongly remonstrated against what she designated cruel treatment. On removing the plaster twenty-four hours afterwards, the vein was found completely divided, the upper part much inflamed, and filled with clotted blood. While the parts were thus exposed, she was seized with a fit of coughing, which induced the coagulum to give way, and hemorrhage succeeded, which compelled resort to be had to the compress and bandage, during the employment of which the original sore was dressed with simple ointment; it had abated nothing of its inflammatory appearance. In five days time the compress and bandage being removed, hemorrhage again succeeded, when their immediate reapplication was necessary, and they were continued for a week longer. On their removal again it was discovered that although the blood had partially coagulated, there seemed no disposition to adhesive inflammation, the object which had all along been so much desired. It was also discovered on more minutely examining the parts that the coagulum was not perfect, as a small quantity of blood oozed from the upper sore. This, as the compress became relaxed, found its way to the vein beneath, which being open to receive it, the circulation in the original sore was thus kept up, causing it to present a very angry appearance. It was now determined to keep the bandage more tight than before, and not to remove it for a week. At the termination of that period, however, there appeared just as little symptom of inflammation in this particular part as at any previous time, which being attributed by Mr. Mayo to the emaciated state of her frame, and the watery state of the sanguineous system, another method was resolved on, namely, that of placing the compress and bandage above the lately-formed sore, to cut off, by pressure, the circulation from the affected part, and by again applying the caustic, to excite inflammation in the vein. This was accordingly done, and on the following day symptoms of inflammation had evidently set in, and these were excited by touching it occasionally with caustic. At length such a degree of inflammation was produced as caused the sides of the vein to adhere.

Dec. 1. The above object was attained this day, and though the original sore continues at this date still under treatment, it was so modified for the better, that a reasonable degree of hope existed that it would be perfectly well in a few days.

The medical officers of the hospital remarked, that they had not for the last ten years known so large a number of patients labouring under varicose veins to be at a given period in the institution as there had lately been. In one week twenty-three cases were counted.

Cases treated by Sir C. Bell.

Sir Charles Bell observes, that the connexion between the pulmonary and general venous systems is too apparent, even in health, to escape observation in practice. "When," he says (addressing the students), "we find respiration in the slightest degree impeded, the veins of the neck alway become distended. This effect is not only perceptible in that particular part, but may be seen in the same class of vessels all over the body. My first object, therefore, is to try to prevent plethora of the pulmonary system, if it have not already taken place, or to mitigate its injurious tendency if it have. In order to avoid the former, I direct some mild cooling aperient previous to and during the application to the affected limb, enforcing also a moderate system of diet, and prohibiting animal food altogether. In those persons who have not laboured under severe affections of the thoracic region, this precaution was found quite sufficient to secure them against constitutional disturbance as a consequence of throwing into the system a quantity of blood equal to the previous contents of the varicose swellings, or of the reduction of œdema, should such be the case. In six weeks after the commencement of treatment (provided the constitution be otherwise sound), a balance appears to be established, and the diminished volume of the lower extremities occasions no embarrassment to the ordinary occupations of life. In considering the treatment of this distemper, when accompanied by ulcers, there are many important facts to be regarded, such as the age of the patient, the state of the general organs important to life, and particular circumstances of the constitution at the time, before we decide on the propriety of even attempting a cure. It is well known that the constitutional resources in advanced age are very limited; they are confined to the accomplishment of a few ordinary efforts, and the powers of the individual to accommodate the system to circumstances are nearly gone. We must, therefore, be careful how we disturb the system in the performance of its functions, as the diseases to which aged persons are subject are often prescribed for at the risk of life. The local treatment of this distemper has for its principal object the lessening of pain in the

part, whether it be ulcerated or not, and enabling the patient to use the erect position and employ the limb, or else, by dividing the distended vessels, to direct the blood into other channels. I generally adopt the palliative mode, which consists in the use of the calico bandage applied, as equally as possible, from the instep to about six inches above the knee. One of the objections urged against this is, the liability of displacement, which renders it necessary to re-arrange the bandage every day. But this may be obviated, by stiching the folds to each other along its entire course, if a sufficient degree of pressure be used, or at least by coiling it three times about the limb. It frequently succeeds in altering the irritable condition of the parts, and removing the pain altogether. When ulcers are present, the only change made is, that of leaving a space open at those parts, for the application of dressings, which should be renewed daily. The bandage may be left on for a week. The dressings in which I have most confidence, are composed of straps of soap-plaster, applied with pretty moderate pressure. This is the mode of treatment which has been most successful with me."

Case 1.—Hannah Allen, ætat. 32, a servant, entered the hospital on October the 28th, and was placed in Percy's Ward. Her principal employment at home was washing, which obliged her to continue standing sometimes during ten hours a day for the last twelve months. About six weeks since she perceived, for the first time, a swelling in the veins of her left leg, which in a fortnight increased so considerably, and was attended with such severe pain, as prevented her walking. A few days afterwards she perceived that her leg had swollen, which so alarmed her, that she determined on entering the hospital. She there complained of cough, but could not refer it to any particular cause, not having been exposed to cold. She felt pain in the right side, under the breast, which was increased when making a full inspiration. Her appearance indicating plethora, and her health in other respects being pretty good, sixteen ounces of blood were taken from the arm, and the following expectorating mixture was ordered:—℞ *Water of Acetate of Ammonia*, 10 ounces; *Tincture of Opium*, 30 drops; *Tartarised Antimony in solution*, 17 grains; *Syrup of Poppies*, 6 drams. Mix. Let a tablespoonful be taken every six hours. As she complains of constipation, let her have two aperient pills at bed-time. The bandage is to be applied from the ankle to a space above the knee.

30. The blood showed a buffy coat. She feels considerably relieved in her chest; inhales without pain; the cough easier; bowels free; the pain in her leg increased.

Nov. 7. Continues to use the expectorating mixture; the cough slight; pain in the chest departed; the bandage was removed, and the œdema found to be less. The distended veins were not near so prominent as before. (Let the bandage be made tighter than before. Discontinue the expectorating mixture, and let her be placed on the low-diet list.) A few days afterwards it was found necessary to abstract eight ounces of blood, in consequence of a return of pain in the chest. Under this palliative treatment she continued, replacing the bandage every week, until Dec. 22, when she departed quite well.

Case 2.—Jane Armstrong, æt. 45, a married woman, and mother of several children, entered Northumberland ward on the 2nd of Nov. with varicose veins and an ulcer, of which she gives the following history:—About two months ago, while taking a pail of water up-stairs, she fell backwards, and felt so much hurt by the accident that she kept her bed for a few days, at the end of which period she intended resuming her occupations, but was prevented by a severe pain in her right hip. For two days after the fall she had partial retention of urine, which then disappeared. However, she continued to retrieve for a fortnight, when she felt a slight degree of soreness and numbness of her right leg, with a sense of coldness. This continued for a week, when one morning, while pulling on her stockings, she perceived that the veins of her leg were swollen, and in a week from that period the vessels became so distended and painful as to cause her some alarm. She then became an out-patient at a dispensary, and so continued until the formation of a tumour, which soon became an ulcer on the vein itself, caused her to apply at this hospital. The pain in her hip still continued, though in a mitigated degree, and sometimes there was a soreness in the neck of the bladder when its contents were discharged. It is more than five years since she gave birth to a child, when her general health was very good. On examining the ulcer, it presented an angry appearance towards the centre; its edges were rough, and covered with yellowish matter; the vein passed through its centre, and the external coat seemed destroyed. She complained of the pain occasioned by dressing, and seemed very nervous whenever the ulcer was exposed to the atmosphere. She was ordered to be placed on low diet. To take two

gentle aperient pills at bed-time. The bandage was placed on, from the ankle to four inches above the knee, with a space left for the dressings of soap-plaster and adhesive straps at each side, which bound them pretty firmly in their places. At the end of a week the bandage was removed, when the veins appeared slightly reduced, but the sore was as angry as before. This may in some degree be accounted for by her unwillingness to remain in bed. Being healthy in other respects, she objected to remaining in a quiet position, and, notwithstanding the pain of which she complained, walked about the ward.

Nov. 16. The bandage was again removed, and the veins found improved in appearance, being much less in size than before; indeed the change was so perceptible as to indicate a speedy cure of the venous affection. The sore, however, continued as at the last report, though its inflammatory appearance was less. Notwithstanding the improved state of the veins, the sore occasioned the greatest pain whenever it was dressed, the operation producing tears. Feels pain in the region of the bladder after the renal discharge.—℞ *Pill of Compound ext. Colocynth*, 12 grains; *Opium*, 4 grains; *Soap*, 3 grains; make into four pills, one to be taken at bed-time.—℞ *Balsam Copaiba*, 10 drops three times a day.

23. The veins have a healthier appearance, their distention has considerably reduced since she commenced using the pills. The pain has decreased on dressing the sore, but its appearance is not indicative of improvement. The discharge is still very great, and its edges have a yellow unhealthy appearance. The pain on making water is less. Continue the medicine, and increase the dose of Balsam Copaiba to 15 drops.

Under this treatment she continued until the 26th of Dec., when she insisted on going home. At that time the veins were quite well, and reduced to their usual dimensions, but the sore, although it had a healthier appearance, was of pretty much the same size as when she entered, the only change being their assumption of a healthy appearance. The medical attendant remarked that the difficulty in healing the sore arose from the current of blood passing so quickly, and also the loss of the outer coat of the vessel itself, which brought it more into contiguity with the muscles surrounding the inflammatory parts. The only objection he had to her departure was the too early use she might make of the limb. Some practitioners, he said, would, in a similar case, have changed the current into another channel altogether, by partially dividing or obliterating the vein; but independent of the uncertainty of success, by the production of adhesion from inflammation brought on by this process, he had a strong objection to it from the constitutional irritation (to which females of delicate frame, or persons who readily became the subjects of nervous excitement, were liable) which had generally been its attendant when he had seen it practised. He had no doubt but this local inflammation would soon yield to a healthy state of the system generally in which case nature would step in and effect a better result than could possibly be brought about by the agency of surgery. "There is a certain stage (he added) to which those ulcers may be brought, when it would be advisable to allow another agency to operate for a certain time, and bring to a completion what the surgeon had commenced. I am of opinion that it is better to allow the current of blood to pass through the sore for some time, than to retard its course, particularly when the inflammatory stage subsides, and the healthy process commences, for at that period an effort is made by the system to retrieve the injury done to the parts by disease, which can never be permanently effected if the channel which is the source of life and energy to the system generally be dried up. The permanent reparation required in the present instance is a thickening of the coats of the vein, and a strengthening of the muscular structure itself, which never can be effected so as to ensure its permanency unless the blood be permitted to flow there. Whenever I find it necessary to turn the channel for a short time during the existence of active inflammation in the parts, I generally apply a pad and compress within an inch and a half of the point at which the vein enters the affected part."

Jan. 6th, 1834. The patient was seen out of the hospital to-day by one of the pupils, who reported that the case was more favourable than when the patient left the house. The sore was diminishing in size.

Case 3.—Jane Walford, æt. 23, was admitted into the hospital on the 2nd of November, labouring under varicose veins of the left leg. The account she gives of her affection is, that about three weeks since she was exposed to cold for some time, which shortly afterwards affected her with a cough, and soreness in the chest and under her left breast; that although advised to have some blood taken away, she disregarded the admonition, to which she attributes the continuance of the

cough and pains in her limbs. A fortnight after the commencement of the attack she found the veins of her left leg swollen, and this in six days time increased to such a degree as to cause her great alarm, and ultimately to determine her to enter the hospital. The vessels at this period were very much distended,—the medical attendant remarked, to a greater extent than he had previously observed in any case in so short a period. This may be said to be in part attributable to the plethoric state of her system, the patient being a full, robust, young woman. The usual means were employed. The leg was bandaged from the ankle to the knee, and she was ordered to remain in bed constantly, and to take the following expectorating mixture:—℞ *Water of Acetate of Ammonia*, 3 ounces; *Cinnamon Water*, 4 ounces; *Balsamic Syrup*, 1 ounce; *Camphorated Tinct. of Opium*, 3 drams; *Tart. Antimony*, 1 grain; a tablespoonful to be taken three times a-day, with two compound colocynth pills at bedtime. To be kept on low diet, without ale or porter.

Nov. 9. The cough is better; the bowels are free, and are not quite regular; no visible amendment in the veins; complains of numbness in the leg and thigh, and there is a want of sensibility at certain periods. Let the medicines already prescribed be persevered in, except the pills, which for the present are to be omitted.

16. The cough quite gone; she complains, however, of pain in her chest, particularly under the left breast. On removing the bandage from her leg, there was no visible contraction of the vessels. The only effect it had had, was that of flattening them; but when the bandage remained off for two hours, as it did on the present occasion, they dilated as much as before it was applied. It was here remarked, that in such a plethoric subject a longer period was necessary than in ordinary cases, and that the strength and fulness of the system should be reduced before a cure could be expected. The bandage was accordingly persevered in, changing it every week until the 20th of December, when there seemed some slight indication of contraction in the vessels. This was evidently the result of a change in her general system. She was considerably thinner than she had been before the alteration, and to this circumstance Sir CHARLES attributed the amendment which had commenced.

Jan. 4, 1834. The bandage was removed this day, and although the improvement was not great, yet there was some amendment. The veins were reduced in size, and flatter, and although the bandage was kept off for two hours, the distention which constantly occurred on former occasions did not return. The sensibility of the limb was restored, and hopes were entertained, and subsequently confirmed, that a few weeks more would complete a cure, without recourse being had to more urgent measures.

THE CORONER'S BILL.

HAVING examined the new Bill for the regulation of the election of Coroners for Counties with every attention which it is in our power to bestow on it, we feel it an imperative duty to state that it does not contain a single clause which is worthy of the approbation of the Legislature. Although in eight inquests out of ten the medical duties connected with inquests are of the utmost importance to the welfare of society; and although the Coroner's Court is, strictly speaking, a medical institution; and although the treatment which medical practitioners have experienced throughout England has given rise to loud, bitter, and general complaint on the subject; yet, not a single provision exists in the Bill to prevent a repetition of such grievances,—to obviate so many sources of dissatisfaction. As the Bill is now constructed, it cannot be passed into a law without reflecting disgrace on the discernment and wisdom of the Legislature. We must again urge, as a matter of propriety, the postponement of the measure until the House is put in possession of the Report of the Medical Committee. Mr. CRIPPS himself cannot reasonably object to such a proposal, and we entreat that Hon. Gentleman to examine with that degree of care which the importance of the proposed measure demands, a Bill which has been put into his hands by some individual whose intentions may be meritorious, but whose capacity is not equal to the task which he undertook to discharge, when he patched up the document in question.

PARLIAMENTARY MEDICAL COMMITTEE.

THE sittings of the Committee for the reception of *viva-voce* evidence were commenced—contrary to an announcement previously made—on Thursday last, at one o'clock. The members of the Committee established their character for gallantry on the occasion, by commencing with one of the weird sisters—the aged lady in Pall Mall East. When called for she was introduced, with becoming diffidence and modesty, by Miss F. HAWKINS, who, for some time past, has presided as maid of honour at the old lady's toilet. We must not disclose the secrets of the Parliament House, and consequently refrain from describing the peculiarities which were exposed to view during this first examination of an antiquated dame, whose tricks connected with medical practice and science have long rendered her more notorious than respected. The old lady, from present indications, would seem to protest that this inquiry is a attack on her virtue. Hence, blushing and trembling at every question of the Chairman, she has summoned to her aid the renowned President—the doughty Sir HENRY HALFORD; and the valiant baronet, excited by a noble and chivalrous spirit, will enter the field of scrutiny at one o'clock on Monday next, when the sittings of the Committee are to be resumed.

We may take this opportunity of stating, for the information of metropolitan practitioners, that the sittings are held in committee-room No. 13, and that gentlemen of the medical profession, on sending their cards to the chairman, by the door-keeper, are favoured with an order for admission. This was the system pursued on Thursday last, and we have not heard that it is to be departed from on Monday.

CORRESPONDENTS.

The publication of the report of the trial "Baker *v.* Parrott" would not, in the present stage of the proceedings, be productive of the least benefit to the plaintiff. An indictment against the jury could not be sustained. It appears to us that a verdict would have been returned for the plaintiff, had not the jury taken into consideration the question of *costs*, and that consideration seems to have produced an erroneous impression on their minds. Surely, if the claims of the plaintiff were founded on justice, he ought not to be deprived of his right merely on the plea that a verdict in his favour would be attended with additional expense to the defendant. The loss attendant on the refusal to pay under such circumstances, is a public benefit, as it often proves an efficient punishment to unjust debtors. That a plaintiff should be deprived of his just right on the pretext that this punishment may not be inflicted on the defendant, is a perversion of every sound principle of law and equity. Thus much the secondary should have explained to the jury.

The publication of the substance of the letter signed "*A Pupil of* ——," would prove the ruin of the lecturer, as even a satisfactory refutation of such statements could not remove the suspicions which announcements of that description are always sure to excite. If our correspondent will call at the office, and confidentially substantiate his allegations, we shall know how to discharge our duty. The students must and shall be protected.

A Constant Reader and Admirer.—Not in the present session of Parliament, but in the next unquestionably.

The publication of the letters of *Dr. Weatherill*, *Dr. M'Carthy*, and some others, is unavoidably postponed for a week.

A correspondent at Birmingham wishes to know "the probable time when the Essays on Medical Reform, (?) advertised by Dr. Epps, will be opened, and the decisions made." (We could not insert what our correspondent wishes us to make public.)

A Subscriber.—Yes.

The report from Worcester, and the letter of a *Ten-Years' Subscriber*, have been received.

NOTICE.—It is particularly requested that ALL letters of business forwarded to the Office of THE LANCET,—whether they relate to the contents of the journal, or refer to transactions connected with the Commission Department,—be INVARIABLY addressed to THE EDITOR—Mr. WAKLEY. If this rule be not observed, it is impossible to guard against the impositions of anonymous scribblers who appear to have no other employment or pleasure than that of subjecting the conductors of journals to a heavy extortion in the shape of post-tax. If all letters of business transmitted to the office be addressed to the Editor, and NO letters, unless so addressed, be received except the postage be paid, impositions will be effectually prevented.

ERRATUM.—In last week's leader, page 906, line 19, *for* leave the inquiry, *read* lead the inquiry.